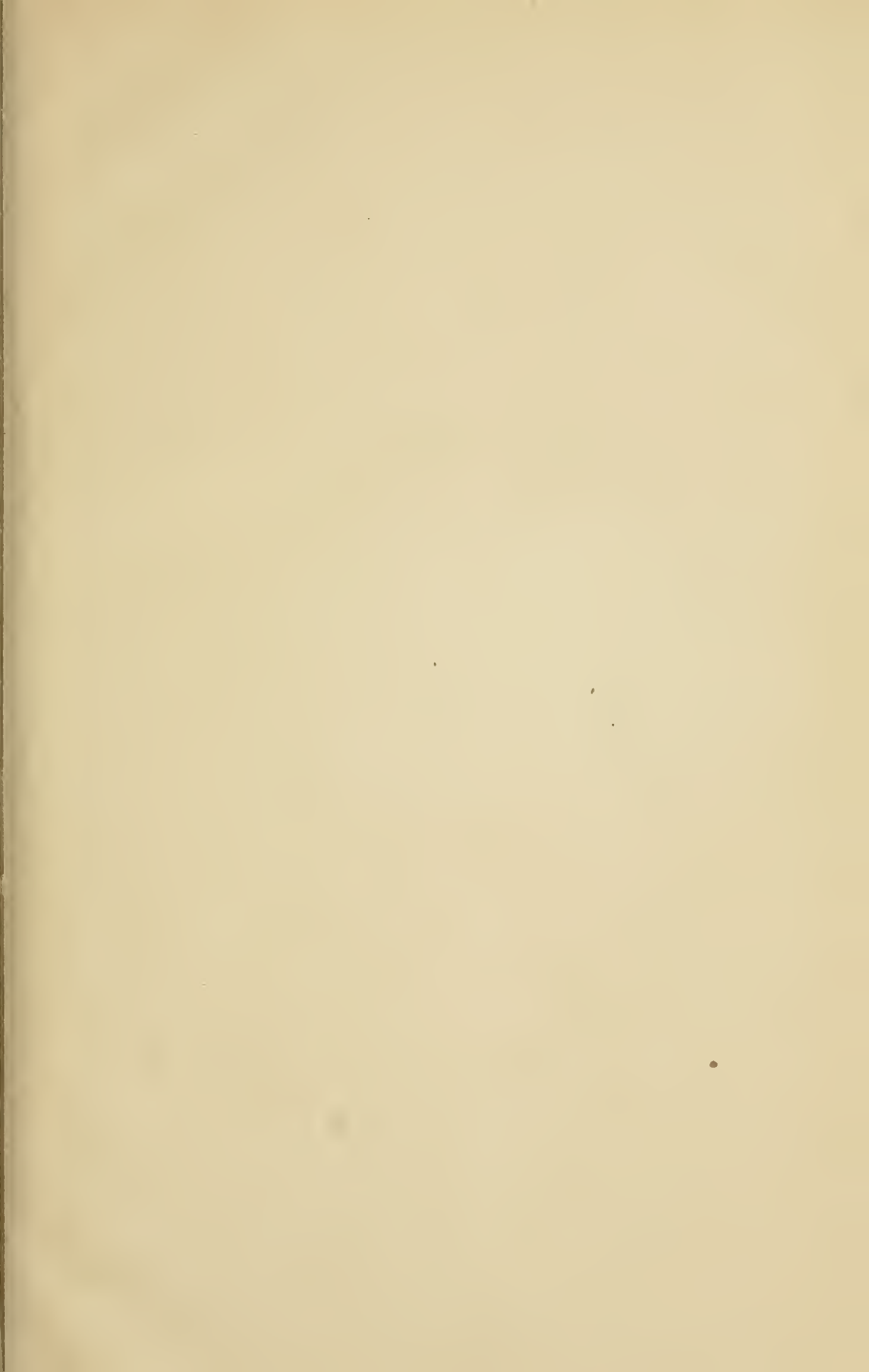





No. 1860

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Grevillea,

A QUARTERLY RECORD OF

CRYPTOGAMIC BOTANY

AND ITS LITERATURE.

EDITED BY M. C. COOKE, M.A., A.L.S.,

*Author of "Handbook of British Fungi," "Fungi, their uses," &c.,
"Rust, Smut, Mildew, and Mould," &c., &c.*

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INDEX.

	PAGE.
Algæ, Britannicæ Rariores Exsiccatae...	142
Algæ, Fresh Water ...	75
Algæ, new British Marine ...	140
Australian Fungi ...	28, 57, 97, 145
Berkeley, M. J., Three Indian Fungi ...	39
British Fresh Water Algæ ...	38
British Hypomyces, Monograph of ...	1, 58
British Moss Flora ...	74
Cladoniei, enumeration of British ...	111
Coming Fungus Forays... ..	16
Cooke, M. C., Asiatic Fungi ...	76
Cooke, M. C., Australian Fungi ...	28, 57, 97, 145
Cooke, M. C., Classification of the Uredines ...	151
Cooke, M. C., Fungi of Socotra ...	39
Cooke, M. C., Hypoxylon, and allies ...	121
Cooke, M. C., New British Fungi ...	10, 69, 153
Cooke, M. C., North American Fungi... ..	106
Cooke, M. C., Xylaria and its allies ...	81
Crombie, J. M., British Cladoniei ...	111
Cryptogamic Literature ...	40, 79, 119, 156
Cryptosphæria millepunctata ...	76
Dothidea, from Lake Nyassa ...	96
Enumeration of British Cladoniei ...	111
Fungi, Asiatic	76
Fungi, Australian... ..	28, 57, 97, 145
Fungi, Macowaniani	18
Fungi, New British	10, 69, 155
Fungi, North American... ..	106
Fungi of Socotra	39
Fungi, South African	18
Fungi, three new Indian	39
Fungus Forays	16, 72
Holmes, E. M., Algæ Exsiccatae	142
Holmes, E. M., New Marine Algæ	140
Heteræcism of the Uredines	8, 52
Hypomyces, British, Monograph of	1, 58
Hypoxylon, and its allies	121
Illustrations of British Fungi	79, 153
Kalchbrenner, C., Fungi Macowaniani... ..	18
Lecanora smaragdula	78
Lichens, British	111, 78

	PAGE.
Micro-fungi	17
Mycologic Art	144
Mycologic Flora of Belgium	74
New British Fnngi	10, 69, 155
Notes on Vaucheria	104
Perisporiaceæ of Saccardo	35
Plowright, C. B., Classification of the Uredines	116
Plowright, C. B., Heterœcism of the Uredines	8, 52
Plowright, C. B., Monograph of British Hypomyces... ..	1, 58
Saccardo, Sylloge Fungorum	34, 66, 81
Some Fresh Water Algæ	75
Sylloge Fungorum	34
Three Asiatic Fungi	76
Uredines, Classification of	116, 151
Uredines, Heterœcism of	8, 52,
Vaucheria, Notes on	104
Xylaria, and its allies	81

Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY
AND ITS LITERATURE.

A MONOGRAPH OF THE BRITISH HYPOMYCES.

BY CHARLES B. FLOWRIGHT.

With Illustrations of all Species, by Dr. M. C. COOKE, M.A., A.L.S.

There are several points which render the members of this genus specially interesting to the mycologist, and which make it a promising field for the worker. In the first place, the nature of matrices upon which the species grow fungi. *Hypomyces* are *inter alia* fungi growing upon other fungi. These fungous hosts vary in nature and in quality very considerably. Some are living fungi, which afford the *Hypomyces* a home long ere they themselves have attained maturity; for example, *H. luteo-virens*, Fr., grows upon agarics. It has occurred near King's Lynn for three successive seasons, yet, although attention has been especially directed to this point, it has not, as yet, been possible to determine with certainty what the agaric is, for the simple reason that the *Hypomyces* attacks it before it appears above ground, and so alters its appearance, that beyond recognising the fact that it is an agaric, its genus, much less its species, cannot be determined. Prof. P. A. Karsten, however, has met with this *Hypomyces* in Finland, upon various species of *Lactarii*, and it is highly probable that, in the course of time, this observation will be confirmed in this country. More commonly, however, these parasites attack fungi which have attained, or even passed their maturity, as *H. chrysospermus*, *aurantius*, *rosellus*, &c. Some grow upon the fleshy *Agaricini* and *Boleti*, others upon the tough, coriaceous *Polyporei* and *Sterei*, while two species affect such ephemeral hosts as the *Myxomycetes* afford. But perhaps the most remarkable species grows, not upon the fungus itself, but upon the ground under or near where it has decayed, this decay being the result of the growth of an earlier stage of the *Hypomyces*. In other words the *Hypomyces*, in its conidial stages, first attacks the host fungus, and by causing its

decay, generates the pabulum necessary for the nourishment and perfection of the higher form of fructification (ascigerous) of the *Hypomyces*, which is found in a stroma developed on the ground.

The genus *Hypomyces*, however, is interesting, not only from its fungicolous habit, but also from the numerous phases of existence through which many of its members pass. In the highest condition under which we meet with it, it is ascigerous, and belongs to the large order *Sphaeriacei*, inasmuch as it has its sporidia inclosed in asci, and its asci enclosed in perforate perithecia. The perithecia are membranous, coloured often brightly, pierced at the apex by minute ostiola, and are, as a rule, seated upon a web of floccose mycelium, which is tolerably permanent, and has usually the same colour as the perithecia. The asci are, as a rule, octosporous, and take the form of an elongated cylinder. The sporidia are of two types, (1) either rather large, fusiform, normally uniseptate, and produced at either extremity into an acute point or pointed appendage; or (2) they are small, oval, with blunt extremities, and, as a rule, uniseptate.

The second form of fructification consists of *Macroconidia* or *Chlamydospores*. These are large spores having usually a thick, often echinulate or verrucose epispore, frequently globose, brightly coloured, and very abundant.

The third form of fructification, the *Microconidia* or *Conidia* proper, are, on the contrary, small hyaline spores, often extremely abundant, born singly upon the tips of hyaline tubes, or concatenated. Many of them have been described as autonomous species of *Mucedenes*, under the genera *Botrytis*, *Verticillium*, *Dactylium*, &c.

All three states of every *Hypomyces* have not as yet been observed, either in this country or elsewhere. As a rule, the ascigerous condition is the least frequently encountered, but this is by no means always the case; perhaps, upon the whole, the microconidia are the most abundantly diffused.

M. Tulasne mentions two species of *Hypomyces*, which have been found in this country, but which cannot, I think, be fairly included in this genus, as it is at present limited, viz. :—

Hypomyces miliarius and *H. tuberosus*. Both these species have this in common, that they, while growing parasitically upon other fungi, develop sclerotia. They were both pointed out by M. Max Cornu at Hereford.

Hypomyces miliarius, Tul. This species consists of a thin white layer of mycelium running over the gills, and sometimes other superficial parts of various *Russulæ* (*R. emetica*, *fætens*, and *adusta*). From this mycelium are produced erect conidiophores, which bear abundant narrow ovate oblong conidia .004-.013 mm. in length. Intermixed with the mycelium are innumerable small globose sclerotia.

Tulasne, Sel. Carp. Fung., III, p. 43, note. Saccardo, Mich., I., p. 287.

Hypomyces tuberosus, Tul., is a much larger plant than the preceding. The sclerotia are large, globose or irregular, whitish or pallid, and externally a good deal resembling those from which *Agaricus cirrhatus* is developed, but there is this very marked difference between these two sclerotia—those of the agaric, when cut across, are pale yellow within, while those of the so-called *Hypomyces* are reddish brown. My friend M. Cornu last autumn gave me some fresh sclerotia of the latter kind, which I placed in incisions in the stem of a specimen of *Lactarius vellereus*, and kept under a bell glass. In due course the sclerotia developed a beautiful mould consisting of a central stem which, in the course of a few days from its first appearance, grew to the height of 2 to 3 c. m., and gave off at right angles branches bearing oval hyaline spores. The branches were very numerous, nearly at right angles to the central stem, not arranged in whorls. The erect direction of the stem soon became lost, and the branches interlaced with those of other specimens, so that an intricate mass was formed, from which was developed a fresh crop of sclerotia.

Tulasne, Sel. Carp. Fung., III., p. 58, note. Saccardo, Mich., I., p. 287.

There remain two species of *Hypocrea* which, only after mature consideration, have been excluded from the present monograph, namely, *H. alutacea* and *H. inclusa*, B. & Br. The former is a well known plant which has been figured and described by various authors under the generic designations of *Hypocrea*, *Cordyceps*, *Claviceps*, *Sphaeria*, and *Clavaria*. As usually found in this country, it bears a stronger external resemblance to the *Torrubia*, than to the members of any other genus. Its fructification, however, clearly shows its affinity to the *Hypocreæ*. Its asci contain eight uniseptate hyaline sporidia, which at maturity fall into two separate halves at the septum, so as to appear as sixteen globose sporidia arranged in a linear series.

M. Tulasne regards this species as an ally of the *Hypomyces*, and considers it parasitic upon *Clavaria ligula*. Now *Clavaria ligula* is not properly speaking an English species, for although within the last few years it has been recorded from Scotland, it has not as yet been met with south of the Dee. In searching for *Hypocrea alutacea*, some few years ago, near Hereford, Mr. C. E. Broome casually mentioned the fact that he frequently found it growing in company with *Spathularia flavida*, and since which time I have found it several times, but always associated with the *Spathularia*, except on one occasion. So intimate and pertinacious has this association been that I cannot doubt its parasitism. The other occasion, alluded to above, was near King's Lynn, when it occurred upon an old stump, and although I cannot recognise the host upon which it grew (any more than the agaric which harbours *Hypomyces luteo-virens*), yet I have no doubt as to the parasitic nature of this plant.

The younger specimens are whitish in colour, and only assume

their alutaceous hue when the perithecia are developed. M. Tulasne (Sel. Fung. Carp., III., t. IV., f. 4) gives a figure of the conidia, which are globose hyaline bodies born upon verticillate septate threads.

Hypocrea inclusa, B. & Br., is a species remarkable, both on account of its curious habitat as well as for its fructification; it is virtually an eight-spored *Hypocrea*, growing internally upon the hymenium of *Tuber puberulum*.

The following seventeen species of *Hypomyces* naturally fall into two groups, viz., those of which the ascigerous fructification is known and those of which it is unknown. The former may further be divided into (a) those having larger acute sporidia, and (b) those with smaller obtuse sporidia.

ASCOSPORES KNOWN.

A. Sporidia acute.

1	<i>Hypomyces</i>	<i>chrysospermus</i> , Tul.
2	"	<i>asterophorus</i> , Tul.
3	"	<i>lateritius</i> , Tul.
4	"	<i>terminosus</i> , Tul.
5	"	<i>rosellus</i> , Tul.
6	"	<i>aurantius</i> , Tul.
7	"	<i>ochraceus</i> , Tul.
8	"	<i>Tulasneanus</i> , Plow. & Cooke.
9	"	<i>luteo-virens</i> , Tul.
10	"	<i>terrestris</i> , Plow. & Boud.
11	"	<i>Broomeanus</i> , Tul.

B. Sporidia obtuse.

12	"	<i>Berkleyanus</i> , Plow. & Cooke.
13	"	<i>aureo-nitens</i> , Tul.
14	"	<i>violaceus</i> , Tul.
15	"	<i>candicans</i> , Plow.

ASCOSPORES UNKNOWN.

16	<i>Linkii</i> , Tul.
17	<i>cervinus</i> , Tul.

1. *Hypomyces chrysospermus*, Tul. *Conidia*, small, white, ovate or oblong, obtuse at both ends, sometimes contracted in the middle; $\cdot 01$ to $\cdot 02$ mm. long by $\cdot 005$ to $\cdot 006$ mm. wide.

Chlamydospores. Spherical, rough with warts, golden yellow, becoming yellow brown, very abundant; $\cdot 013$ to $\cdot 02$ mm. in diameter.

Perithecia. Numerous, crowded, upon and amongst the golden powder of the chlamydospores, ovoid, with a conico-attenuated apex; at first hyaline, then golden yellow, smooth; $\cdot 3$ to $\cdot 32$ mm. in height.

Asci. Cylindrical, attenuated below; $\cdot 12$ to $\cdot 2$ mm. long by $\cdot 001$ mm. wide.

Sporidia eight, elongated, lanceolate, hyaline usually, unequally uniseptate; $\cdot 021$ to $\cdot 03$ mm. long by $\cdot 006$ mm. wide.

- Hypomyces chrysospermus*, Tul. Ann. Sc. Nat., Series iv., vol. XIII. (1860), p. 16.
 „ „ Karsten Mycol. Fenn. II., p. 209.
 „ „ Sel. Fung. Carp. III., p. 49, t. VIII., f. 1-13.
 „ „ Fuckel Symb. Myc., p. 182.
 „ „ Berk. and Broome. Ann. N. H., No. 1832.
 „ „ Phillips and Plow., Grev. VIII., p. 104.
 „ „ Saccardo Mich. I., p. 285.
 „ „ Mycol. Venet. sp. 124.

Chlamydospores :

- Tubiporus sulphuratus*. Paulet. t. 183, fig. 1, 2.
Reticularia chrysosperma. Bull. t. 476, f. 4.
Mucor chrysospermus. Bull. t. 504, f. 1.
 „ „ Sow. t. 378, f. 13.
 „ „ With. IV., p. 370.
 „ „ Purton. II. & III., No. 1121.
Uredo mycophila. Alb. and Schw., p. 122.
 „ „ Pers. Obs. Myc., p. 16.
 „ „ „ Synop., p. 214.
 „ „ De Cand. Flor. Gall. II., p. 230.
Sepedonium mycophilum. Nees Syst. der Pilze., p. 44, t. III., f. 38.
 „ „ Mart. Fl. Cryp. Erlang., p. 339.
 „ „ Link. Obs. I., p. 16.
 „ „ Willd. Sp. Plant. VI., p. 29.
 „ „ Corda Icones. IV., p. 7, t. III., f. 23.
 „ „ Grev. t. 198.
 „ „ Chev. Fl. Par., t. III., f. 16.
 „ „ Chev. Fung. et Byss., t. 16.
 „ „ Rabh. Exs. 184.
 „ „ „ Cryp. Flor. I., p. 71.
Mycobanche chrysosperma. Pers. Champ. Com., p. 133.
 „ „ Wallr. Fl. Germ. II., p. 272.
Sporotrichum mycophilum. Spreng. Sys. Veg. IV., p. 549.
Sepedonium chrysospermum. Link. Obs. I., p. 29.
 „ „ Fries Sys. Myc. III., p. 438.
 „ „ Fries Sys. Veg. Sc., p. 497.
 „ „ Berk. Eng. Fl. v., pt. 2, p. 350.
 „ „ Tulasne Act. Heb. Ac. Science, 1855, p. 616.
 „ „ Berk. Outlines, p. 355.
 „ „ Cooke Hdbk., p. 619.
 „ „ Fckl. Exs., No. 141.
 „ „ Stevenson Mycol. Scot., p. 286.
 „ „ Berk. Cryp. Bot., pp. 298, 304, 306.
 „ „ Kunze Exs. 223.
 „ „ Bisch. f. 3806.
 „ „ Bonord. Hdbk., t. 4, f. 103.
 „ „ Karst. Exs. 387.

Common in the conidiferous state upon various Boleti, especially *B. scaber*, *chrysenteron*, *subtomentosus*, *badius*, and *edulis*. It also occurs on *Paxillus involutus*, and upon *Strobilomyces strobilaceus*. Tulasne records it upon *Scleroderma verrucosum*, *Octaviania asterosperma*, and *Melanogaster variegatus*.

The ascigerous state is much the most uncommon ; it was found by the Rev. M. J. Berkeley at Coed Coch, and in Chapelton wood near Forres by the Rev. J. Stevenson and myself in September, 1879. The infected Boletus first shows signs of being affected with the parasite by producing upon its surface, at some point, a crop of microconidia. If it be examined in this stage, numerous mycelial tubes will be seen making their way downwards or towards the centre of the matrix. These penetrate with great rapidity into the substance of the Boletus. Immediately beneath the microconidia will now be found upon the same mycelium the macroconidia. They are at first almost colourless, but soon become faintly tinged with yellow, then golden. The whole fungus in a short time becomes reduced to a mass of golden powder, which falls to pieces on the gentlest touch. What the precise conditions are which favour the production of perithecia I have failed to discover beyond that the too rapid development of Chlamydospores must not take place.

PLATE 146. *a.* Portion of a Boletus with the conidia growing in a white woolly mass upon its surface. Nat. size.

b. Part of the same $\times 400$.

c. Microconidia $\times 400$.

d. Macroconidia $\times 400$.

e. Perfect fungus on Boletus. Nat. size.,

f. Perithecia $\times 20$.

g. Perithecium $\times 140$.

h. i. Asci and sporidia $\times 400$.

k. Sporidia $\times 600$.

2. *Hypomyces asterophorus*, Tul. Conidia, cylindrical, produced from the extremities of the branching mycelial tubes ; $\cdot 01$ - $\cdot 015$ mm. long by $\cdot 0035$ mm. wide.

Chlamydospores produced singly upon the lower and thicker portions of the mycelial tubes ; spherical, rough with warts, appendiculate, eventually falling into a copious fawn-coloured powder ; $\cdot 02$ to $\cdot 025$ mm. in diameter.

Perithecia formed in and by the effused mycelial tubes, crowded, sessile, sphaerico-ovoid, more or less elongated at the neck ; with acute, pervious ciliate ostiola ; pale yellow brown, sub-hyaline ; $\cdot 15$ mm. high by $\cdot 07$ - $\cdot 09$ mm. wide.

Asci broadly ovate, abruptly attenuated below.

Sporidia narrowly lanceolate, curved, mucronate at either end, uniseptate, pale yellowish brown ; $\cdot 025$ - $\cdot 035$ mm. long by $\cdot 006$ mm. wide.

Hypomyces asterophorus, Tulasne. Sel. Fungi Carp. vol. III., p. 54, t. 9.

- Hypomyces asterophorus*, Fuckel. Symb. Myc., p. 181.
 " " Karsten Myc. Fenn. II., p. 209.
 " " Saccardo Mich. I., p. 285.

Conidia :

- Elvella clavus*. Schæff., t. 279.
 " " Paulet., t. 190, f. 4.
Fungoidaster parvus, &c. Mich., p. 200, t. 82, f. 1.
Merulius lycoperdoides. De Cand. Fl. Fr., vol. II., p. 128.
Onygena agaricina Schweintz Fung. Car. Super., p. 65.
Agaricus lycoperdonoides. Bull. t. 166 and t. 516, f. 1.
 " " Sow. t. 383.
 " " Pers. Synop., p. 325.
 " " Pers. Mycol. Europ., vol. III., p. 127.
Agaricus (Asterophora) lycoperdoides. Nees Syst. d. Pilze., p. 206, t. 24, f. 194.
Asterophora Linkii. Schrad. N. Jour. Bot., vol. III., p. 17.
 " " " Mag. Nat. Fr. z. Berlin, III. (1809), p. 33.
 " lycoperdoides. Ditm. Sturm. t. 26.
 " " Rabh. Exs. No. 235.
 " agaricoides, lycoperdoides, physaroides, and trichoides. Fries Obs. Myc. II., p. 367.
 " agaricoides, lycoperdoides, and physaroides. Fries. Sys. Mycol. III., p. 205.
 " lycoperdoides and trichoides. Fries Sys. Veg. Sc., p. 446.
 " agaricoides and lycoperdoides. Berk. Eng. Fl., vol. v., pt. 2, p. 322. Wallr. Flora. Germ., pt. 2, p. 270.
 " lycoperdoides and physaroides. Bonorden, p. 134, t. 11, f. 224.
Asterosperma agaricoides. Pers. Champ. Comes. t. I., p. 132 and 134.
Nyctalis asterophora. Fries Ep., p. 371. S. V. S., p. 312. Hymen., p. 463.
 " " De Bary Bot. Zeit., t. 17 (1859), p. 385 and 397, t. 13, f. 1-11.
 " " Berkeley Outlines, p. 217. Cryp. Bot., p. 305, 366.
 " " Cooke Hdbk., p. 231.
 " " Stevenson Mycol. Scot., p. 116.
 " " Cooke and Quelet, p. 151.
 " " Karst. Exs., 512.

Parasitic upon *Nyctalis parasitica*, certain years abundantly ; at other times scarcely a specimen is met with.

The perithecia of this species of *Hypomyces* differ considerably

from those of the other members of the genus. They are formed of very large polygonal cells, which become elongated and parallel where they form the ostium. The conidial state of this fungus has been known in this county since the time of Sowerby, but it was only in the month of September, 1880, that I was fortunate enough to meet with perithecia. Several specimens were then found in Hockering Wood in company with the Rev. J. M. Du Port. Their development was carefully watched by placing them attached to the matrix (*Russula nigricans*) upon damp sand under a bell glass. The conidia specially affect the pileus of the *Nyctalis*, often so freely as to arrest the growth of the plant, and to cause it to assume the appearance of an *Onygena*. The microconidia are produced by the tips of the hyphæ, which break off in little cylindrical bodies. Lower down upon the same hyphæ the macroconidia are produced often in great profusion. The lowest portions of the hyphæ are dilated and convoluted, and it is by an intertwining of these convolute bases that the perithecia are produced, pl. 147 *d*. As was the case with *Hypomyces chrysospermus*, too free a production of macroconidia is unfavourable to the development of perithecia. These are most frequently found upon or inside the stem of the *Nyctalis*, but they are by no means of common occurrence.

PLATE 147. *a*. *Nyctalis* bearing the parasite. Nat. size.

b. Macroconidia $\times 400$.

c. Microconidia $\times 400$.

d. Perithecium in formation $\times 400$.

e. Perithecium $\times 40$.

f. Perithecium $\times 400$.

g. Asci and sporidia (after Tulasne) $\times 400$.

h. Sporidia $\times 400$.

ON THE HETERŒCISM OF THE UREDINES.

In a recent number of "Grevillea" a number of experiments performed by the writer upon the alternation of generation of *Puccinia graminis* with *Æcidium berberidis* were detailed. It will be remembered that so frequently were the check plants affected with *Uredo* that the obvious conclusion arrived at was that the *Æcidium* had very little to do with its production. This year another series of cultures was instituted, in which the promycelium spores of *Puccinia graminis* were sown upon young barberry plants with the unvarying result of producing the *Æcidium*, the check plants remaining free from the fungus. Young wheat plants, which were kept continuously covered by bell glasses from the time they were first sown till the experiment was concluded, were also found, when infected with ripe *Æcidium berberidis* spores, to become infected with *Uredo*, while similar plants not so infected remained healthy. But several other species of heterœcismal *Uredines* were

made subject of experiment; some of the most strikingly successful were made with *Podisoma juniperi*, which produced the *Ræstelia* so abundantly as to cause the death of young hawthorns operated upon. It is proposed that an epitome of all these experiments be read at some of the Hereford meetings next October, when no doubt they will be fully criticised. Of course to those botanists who have already accepted the heterœcism of the *Uredines* these experiments will appear to be a work of supererogation, and a mere waste of time, but it must be remembered that many of us in this country have hitherto either declined altogether to accept the theory until further evidence was forthcoming, or else believed it in a half-hearted, provisional sort of way. It is hoped that this year's work has not been thrown away, but that those who were doubtful upon the point may see their way to accept it. Personally my own feelings, when this year's experiments were begun, were biased against it by the unsatisfactory result of the 1881 experiments. But by investigating the life-history of more species, especially such as are uncommon, where the liability to accidental infection was practically nil, the accumulated evidence became irresistible. It is worthy of notice that no less than three *Uredines* which were hitherto not known to be British were by those experiments brought to light, viz., *Æcidium zonale*, Duby, on *Inula dysenterica*; *Puccinia magnusiana*, Körnicke, on *Phragmitis communis*, hitherto regarded as a variety of *Puccinia graminis*; and *Puccinia poarum*, Nielsen, a fungus I have for many years known both in the *Uredo* and *Puccinia* form, but always regarded as a form of *Puccinia coronata*.

It is needless to add that our acceptance of heterœcism will entail a complete rearrangement of the *Uredines*, and it is hoped that a paper on this subject may also be submitted to the members of the Woolhope Club.

Had it not been for the kindness of my friend M. Cornu in giving me directions and hints as to the manner of conducting these experiments, we might have gone on in our old groove for some time to come—a proof, if any were needed, of the utility of our autumnal conferences.

Of course these experiments—amounting, as they do, to more than a hundred—have entailed some little work, and although there is no pretence of originality about them, yet the satisfaction of being able to see the germ-tube of a spore of *Æcidium berberidis* insinuating itself into the stoma of a wheat leaf, which I first watched at a very early hour one summer morning, was “pretty considerable.”

CHARLES B. PLOWRIGHT.

NEW BRITISH FUNGI.

By M. C. COOKE.

(Continued from vol. x., p. 152.)

Agaricus (Tricholoma) excissus, *Fr. Icon. t. 44, f. 2.* Cooke *Illus.*, t. 171.

Pileus rather fleshy, campanulate, then expanded, at length umbonate, even; *stem solid, even*, thin, equal, smooth, rather shining; gills emarginate, crowded, *linear*, white.

In pastures. Cromer (Rev. J. M. Du Port), May, 1882.

Agreeing better with the figure in Fries' "Icones" than with his description. Pileus 2 inches, umbonate, umbo darker, opaque, mouse-grey, stem whitish, turning brownish at the base, 2 inches long, slightly striate. No perceptible odour.

Agaricus (Hypholoma) lacrymabundus, *Fries Icon., t. 134, f. 1.*

"The species figured in the 'Icones' occurred last October at Coed Coch, and near Hereford. What has usually passed under this name is *A. velutinus* P. We find the spores '0003-0004 inch long, and in *A. pyrrhotrichus* '0005-0006 inch."—*Berk. & Br. Ann. Nat. Hist.*, No. 1950.

Agaricus (Hypholoma) cascus, *Fr. Hym. Eur.*, 294.

"What we described in the 'Notices' as an abnormal state of *A. appendiculatus* is undoubtedly this species."—*Berk. & Br. Ann. Nat. Hist.*, No. 1950.*

Agaricus (Hypholoma) pilulæformis, *Bull. t. 112.*

Penzance, Mr. Ralls. "This is possibly a veil-bearing state of the very common *A. spadiceus*, though Fries says 'velum etiam primitus absolute nullum.' We are inclined rather to consider it the young of *A. hydrophilus*, Bull. t. 511; still we think it right to record its occurrence in Cornwall. We do not suppose, with Fries, that it has anything to do with *Bolbitius*."—*Berk. & Br. Ann. Nat. Hist.*, No. 1951.

Agaricus (Psilocybe) hebes, *Fr. Hym. Eur.*, 303.

Pileus rather fleshy, convex, then expanded, obtuse, smooth, hygrophanous; margin slightly striate; stem fistulose, smooth, equal, growing pallid; gills *adnate, triangular*, crowded, whitish then fuscous. *Pers. Myc. Eur.* III. t. 28, fig. 5.

Amongst leaves, &c., in beech woods.

"Not exactly the form figured by Fries in his Icones as the stem is taller, but the colour of the hygrophanous pileus is the same exactly, the spores atropurpureous. Pileus at first obtuse, but in drying it becomes spuriously and minutely umbonate. Spores '0007 in. long."—*B. & Br. Ann. Nat. Hist.*, No. 1952.

Agaricus (Psathyra) corrugis, *P. Syn.*, p. 424.

Shanklin. The short form figured by Corda, in Sturm, under the name of *A. vinosus*.—*B. & Br. Ann. Nat. Hist.*, No. 1952.*

We also found the same form in the autumn of 1881 at Kew gardens.—*M.C.C.*

Agaricus (Psathyra) gossypinus, *Bull. t.* 425, f. 2.

Found at Coed Coch, Oct., 1881.

Spores .0004 to .0005 in. long.—*B. & Br. Ann. Nat. Hist.*, No. 1953.

Agaricus (Psathyra) nolitangere, *Fr. Hym. Eur.*, 309.

Pileus membranaceous, campanulate, then expanded, *everywhere striate*, hygrophanous; squamulose about the margin; fragile, nearly naked, becoming brownish, *apex even*; gills adnate, broad, pallid fuscous.—*B. & Br. Ann. Nat. Hist.*, No. 1954.

Amongst twigs of oak.

Agaricus pennatus, Quelet. = *Agaricus semivestitus*, Berk.

Agaricus (Psathyra) microrhizus, *Lasch.*

Pileus membranaceous, campanulate, even, dry, sprinkled with shining atoms, at first *yellow-pilose*; stem thin, short, *rooting*, *silky*, whitish; gills adnexed, crowded, narrow, pallid, becoming blackish brown.—*Fr. Hym. Eur.* p. 309. *B. & Br. Ann. Nat. Hist.*, No. 1955.

In grassy places.

"Gregarious, varying in size from a few lines to 1½ inch, when it approaches the finer forms of *A. gossypinus*."—*B. & Br.*

Agaricus (Psathyrella) trepidus, *Fr. Syst.* 1, 238, *Hym. Eur.*, p. 314.

Pileus membranaceous, campanulate, obtuse, smooth, very densely striate, hygrophanous; disk even, stem almost straight, smooth hyaline, pellucid; gills adnate, *ventricose*, *crowded*, thin, fuliginous, then black.—*Pers. Myc. Eur.* III. t. 29, f. 1. *B. & Br. Ann. Nat. Hist.*, No. 1956.

Hothorpe (Miss Berkeley).

Stem about 3 inches long. Pileus about an inch, or more.

Coprinus aratus, *Berk. Outl.*, p. 176.

A group of this fine species, of large size, occurred at Hothorpe, Dec. 5, 1881. As the character given before was drawn up from a solitary specimen gathered in a very different situation, it requires a little amendment. The disk is sometimes rugose, sometimes even; the gills are at first attached, but so slightly that they easily part from the stem, so as to appear free, but they are still connected at the base, as if there were a slight collar. For "*lamellis liberis*," "*lamellis secedentibus*" should be substituted.—*B. & Br. Ann. Nat. Hist.*, No. 1956.*

Coprinus alternatus, *Fr. Hym. Eur.*, p. 327.

Pileus rather fleshy, hemispherical, even, quite smooth, discoid, *pallid*, *chalky*, *disk pale unber*; stem hollow, attenuated from the thickened base, *smooth*; gills adnate, linear, cinereous, then black. *Fl. Danica*, t. 1961.—*B. & Br. Ann. Nat. Hist.*, No. 1957.

East Dereham (Rev. J. M. Du Port). This is scarcely a *Coprinus*, but rather a *Psathyrella*.—*B. & Br.* Stem 3 to 4 in., pileus $1\frac{1}{2}$ inch.

Coprinus papillatus, *Fr. Hym. Eur.*, 326.

Pileus membranaceous, ovate, then campanulate, striate, mealy grey, then torn, disc *papillate with minute points*, livid, fuliginous; stem fistulose, smooth except at the base, *hyaline pellucid*; gills free, approximate, black.—*B. & Br. Ann. Nat. Hist.*, No. 1958. *Batsch, fig. 78.*

In a fern-case. Shrewsbury.

Cortinarius (Dermocybe) cotoneus, *Fr. Hym. Eur.*, 372.

Olive. Pileus fleshy, campanulate, then expanded, bullate, somewhat repand, *innate—velvety*; stem solid, *girt with the fuscous veil*, base thickened; gills rather crowded, olive, then cinnamon brown.—*B. & Br. Ann. Nat. Hist.*, No. 1959.

In oak woods. Clifton (*C. Bucknall*).

Pileus 3 in., stem 3 in.

Paxillus Fagi, *B. & Br. Ann. Nat. Hist.*, No. 1961.

Beautifully gregarious, crisped, above pallid, beneath orange, gills crispate, orange.—*B. & Br.*

On beech stump. Coed Coch.

“Forming a wide crisped mass of great beauty, very different in appearance from *P. panuoides*, which is confined to fir wood, or saw-dust.”—*B. & Br.*

Hygrophorus fusco-albus, *Fr. Hym. Eur.*, 410.

Pileus fleshy, convex, then plane, even, smooth, viscid, fuscous, then cinereous, stem solid, equal, *when dry white floccose at the apex*, gills decurrent, broad, rather thick, snow-white.—*B. & Br. Ann. Nat. Hist.* No. 1962. *Jungh, in Linn, v. t. 6, f. 1.*

In woods amongst moss.

Stem 2 to 3 inches long, 4 to 6 lines thick. Pileus about two inches. Remarkable for its distinct floccose veil.—*B. & Br.*

Hygrophorus Wynnei, *B. & Br.*

“A good figure of this beautiful species is given in ‘Fungi Tridentini,’ by Bresadola, under the name of *Clitocybe xanthophylla*.”—*B. & Br. Ann. Nat. Hist.*, No. 1962.*

By an error *Marasmius Wynnei*, *B. & Br.*, is named in the “Notices” instead of the above species. It may also be added that M. Bresadola does *not* consider his species to be the same as the above *Hygrophorus*, and hence he takes exception to the above note.

Polyporus (Pleuropus) Michellii, *Fr. Hym. Eur.*, p. 533.

Pileus between fleshy and tough, depressed, repand, *rather silky, somewhat squamulose*, white, then yellowish; stem lateral, short, bulbous, rough, white, brownish at the base; pores *large, rounded, oblong, entire, white*.—*Micheli t. 61, f. 2. B. & Br. Ann. Nat. Hist.*, No. 1963.

On willow trunks. Penzance.

Polyporus (Merisma) acanthoides, *Fr. Hym. Eur.*, 540.

Imbricated, multiplex, tough then leathery; Pileoli infundibuliform, incised and dimidiate, somewhat zoned, longitudinally rugose, becoming ferruginous, stems connate, branched, pores sinuous, thin, edge toothed, white, then rufescent.—*Pers. Ic. Pict.*, t. 6. B. & Br. *Ann. Nat. Hist.*, No. 1964.

On trunks or the ground. Penzance.

Polyporus (Placodermei) pectinatus, *Klotsch. in Linn. VIII. p. 485. Fr. Hym. Eur.*, 559.

Pileus between corky and woody, hard, triquetrous, concentrically plicate above, scaly, tomentose, ferruginous brown, pores small, short, obtuse, gilvous, naked.—*B. & Br. Ann. Nat. Hist.*, No. 1965.

On trunks. Penzance.

"We follow Fries, though with some hesitation, in considering the European forms figured by Quelet identical with the Indian species. It cannot, however, be referred to either *P. salicinus* or *P. conchatus*."—*B. & Br.*

Polyporus (Resupinatus) mucidus, *Fr. Hym. Eur.*, 577.

Effused, rather thick, somewhat immersed, soft, white, growing pallid, circumference indeterminate, byssoid, pores of medium size, unequal and torn.—*B. & Br. Ann. Nat. Hist.*, No. 1967.

On old decayed wood of firs. Penzance.

Dædalea cinerea, *Fr. Sys. i. 336. Hym. Eur.*, p. 588.

Pileus between corky and woody, thick, rather undulate, zoned, tomentose, cinereous; pores minute, obtuse, quite entire, some rounded, others very long and labyrinthiform, flexuous, intricate, white, or cinereous.

On beech. Penzance.

"The thick substance separates this from every form of *D. unicolor*; also the inciso-strigose surface of the pileus."—*B. & Br.*

Hydnum aureum, *Fr. Hym. Eur.*, 613.

Subiculum determinate, rather cartilaginous, contiguous, smooth, golden yellow, circumference dentate and radiating; spines subulate, equal, of the same colour.—*B. & Br. Ann. Nat. Hist.*, No. 1970.

Penzance.

"A fine species, with a meruloid aspect."

Hydnum denticulatum, *Pers. Myc. Eur. II. 181.*

Longitudinally effused, rather fleshy, ochraceous-yellow, shining, subiculum thin, smooth, rather farinaceous, spines crowded, equal, margin denticulate.—*B. & Br. Ann. Nat. Hist.*, No. 1971.

On wood. Penzance.

Irpex carneus, *Fr. Hym. Eur.*, 622.

Effused, between cartilaginous and gelatinous, membranaceous, adnate, growing reddish, teeth obtuse or subulate, entire, united at the base.—*B. & Br. Ann. Nat. Hist.*, No. 1972.

On bark. Penzance.

"When perfect it is a true *Irpex*."

Phlebia lirellosa, *Pers. Myc. Eur.* III. p. 2, t. 18, f. 2, 3.

Resupinate, umber-grey, margin free, sinuosities very minute, linear, intermixed with pores.—*B. & Br. Ann. Nat. Hist.*, No. 1973.

Penzance.

Stereum vorticosum, *Fr. Hym. Eur.*, 639.

"Noble specimens of this very beautiful species, remarkable for its costate hymenium, were sent from Penzance by Mr. Ralfs."—*B. & Br. Ann. Nat. Hist.*, No. 1973.*

Corticium umbrinum, *A. & S. Consp.*, 281.

Effused, soft, fleshy, umber, villose beneath, circumference radiating, short, of the same colour; hymenium tuberculose, then collapsing, pulverulent ferruginous.—*Fr. Hym. Eur.*, 858. *B. & Br. Ann. Nat. Hist.*, No. 1974.

On rotting spruce, &c. Penzance, &c.

Corticium maculæforme, *Fr. Hym. Eur.*, 656.

Orbicular, then confluent, indurated, thin, somewhat roseate, circumference similar, smooth; hymenium spuriously papillose, bluish grey pruinose.—*Fl. Dan.*, t. 1738, f. 2. *B. & Br. Ann. Nat. Hist.*, No. 1975.

On bark. Penzance.

Clavaria pyxidata, *Pers. Comm.*, t. 1, f. 1.

Pallid, then clay colour, or reddish; trunk thin, smooth, branched; branches and branchlets all excavated in a cup-like manner at the apex; margin of the cups proliferous.—*Fr. Hym. Eur.*, 669. *B. & Br. Ann. Nat. Hist.*, No. 1976.

On wood. Penzance.

Calocera corticalis, *Fr. Hym. Eur.*, 681. *Batsch*, fig. 162.

Cæspitose, erumpent, soft, pellucid, pale flesh colour; clubs subulate, distinct.—*B. & Br. Ann. Nat. Hist.*, No. 1977.

On bark. Penzance.

Penicillium macrosporum, *B. & Br. Ann. Nat. Hist.*, No. 1978.

Orange; spores globose, large.

On decaying *Lactarius* (J. D. C. Sowerby).

Drawing in the British Museum Collection.

Rhinotrichum ramosissimum, *B. & Curt.*

Pale tan-coloured, flocci very much branched, articulate, the ultimate joints elongated and covered with spicules; spores obovate, apiculate below.—*North Amer. Fungi*, No. 662.

On rotten wood. Moffat, N.B. Dr. Bayley Balfour.

This peculiar variety had the flocci in tufts so as to simulate exactly *Trichia chrysosperma*, with the peridia ruptured.

Cercospora Bloxamii, *B. & Br. Ann. Nat. Hist.*, No. 1979.

Spots orbicular, pallid; spores elongated, fusiform, acuminate at each end, multiseptate.

On decaying leaves of turnips.

Formerly distributed as *Septoria Bloxami*.

Ovularia elliptica, B. & Br. *Gard. Chron.*, 1881, p. 340. *Ann. Nat. Hist.*, No. 1930. *Grevillea*, vol. x. p. 51.

On various lilies.

Ovularia Syringæ, B. & Br. *Gard. Chron.*, 1881, II. p. 665. *Ann. Nat. Hist.*, No. 1981.

Flocci for the most part decumbent, acrospores at first nearly globose, with a distinct terminal papilla, then elliptic, at length ovate, large. ($\cdot 002$ – $\cdot 003$ in. long.)

On leaves of *Syringa*. Aberdeenshire (A. S. Wilson).

Ramularia pruinosa, *Speg. Dec.*, 106.

Spots ochraceous, at first small, round, soon occupying the entire leaf; tufts densely gregarious, covering the surface of the spots with a frosty whiteness. Threads hyaline, continuous ($\cdot 04$ – $\cdot 06 \times \cdot 003$ mm.) apex 1–3 toothed; conidia cylindrical, rounded at the ends ($\cdot 02$ – $\cdot 03 \times \cdot 003$ – $\cdot 004$ mm.) continuous, or uniseptate, hyaline. *Sacc. in Michelia* II. p. 170

On living leaves of *Senecio Jacobæa*, Forbes. (Rev. Jas. Keith.)

Mystrosporium alliorum, *Berk. Gard. Chron.*, 1878, p. 192. *Ann. Nat. Hist.* No. 1982.

Pedicels flexuose, articulated; spores terminal, or sometimes lateral, oblong, contracted at the middle, here and there pyriform, multi-articulate, dissepiments horizontal, and oblique.

On onions. Culver, Exeter.

Triphragmium filipendulæ, *Pass. Nuovo Giorn. Bot. Ital.*, VII. 255.

Stylospores, sori scattered, globose, covered by the epidermis, yellow, then girt by the ruptured epidermis, orange; spores globose or ovate, orange, stipitate.

Teleutospores, sori as above, brown, shining, then black, pulverulent; spores subglobose, at first orange then brown, even; stem hyaline, rather long.

On *Spiræa filipendula*. Mount Caburn, near Lewes, September 14, 1862 (*Herb. Currey*).

Puccinia Oxyriæ, *Buch. White MSS.*

No description given.

On leaves of *Oxyria reniformis*. Skye.

Spores including the short hyaline stem $\cdot 0024$ in. long; the divisions of the head subglobose, even.

Glæosporium Lindemuthianum, *Sacc. Fungi Ital.*, 1032.

Spots roundish, brownish, at first with a rufous border, pustules dirty white in the middle of the spots, inflated, then erumpent; sporophores fasciculate, cylindrical, simple, conidia, terminal, oblong, straight or curved, ends rounded ($\cdot 016$ – $\cdot 019 \times \cdot 0045$ – $\cdot 0055$ mm.), granular within, hyaline.—B. & Br. *Ann. Nat. Hist.*, No. 1984.

On pods of *Phaseolus*. Sibbertoft.

Leotia chlorocephala, *Schwein.*

Pileus globose, quite smooth, rather pellucid, or verdigris-green. Stem elongated, twisted, powdery. Asci clavate-cylindrical. Sporidia cylindrical, obtuse, curved, nucleate ($\cdot 02$ – $\cdot 022 \times$

·005 mm.); paraphyses filiform.—*Cooke Myco.*, fig. 174. *B. & Br. Ann. Nat. Hist.*, No. 1985.

On the ground. Hampshire.

"The tint of the green is so dark that it is nearly black, so that house painters might call it 'invisible green.' *L. atrovirens*, P., occurred at Coed Coch in September, 1881; but it is clearly merely a state of *Geoglossum viride*, which accompanied it. The specimens agreed in every respect with the figure in *Myc. Eur.*, t. 9, f. 1 to 3."—*B. & Br.*

Stigmatæa Nicholsoni, *Cke.*

On both surfaces. Perithecia in circles, black, erumpent, shining, convex, at length collapsed, smooth; asci clavate; sporidia elliptical, rounded at the ends, uniseptate, constricted, pale brown (·018 × ·008 mm.)

On leaves of Portugal Laurel. Newcastle, Co. Tipperary (Mr. Geo. Nicholson.)

Accompanied by pear-shaped stylospores, (about 016×01 mm.), pale brown with two septa, the middle cell again divided longitudinally, or with 4-5 cells formed by irregular division, apparently the stylospores are produced in separate perithecia.

Sphæria leprosa, *Pers. in Fr. Sys. Myc.* II. 365.

Immersed, perithecia few, nestling in the bark; necks straight, united in a white stroma; disk minute, erumpent; ostiola small.—*B. & Br. Ann. Nat. Hist.*, No. 1986.

On lime bark. Penzance.

"Spores ·0008 inch narrow."—*B. & Br.*

Sphæria aggregata, *Lasch. in Kl. Herb. Myc.* II. 541. *Fckl. Rhen.*, 977.

According to Fuckel this is a *Cenangium* of which he had seen no asci, only stylospores. See *Symb. p.* 271.—*B. & Br. Ann. Nat. Hist.*, No. 1987.

On *Euphrasia officinalis*. Penzance.

Didymium effusum, *Link.*

Sporangia sessile, or without regular form, snow-white, or now and then yellowish white; capillitium of very fine fibres with branches combined into a thickly set net, colourless, provided with numerous small thickenings. Spores dull violet, almost smooth (·01-·011 mm. diam., rarely only ·008 mm.).—*B. & Br. Ann. Nat. Hist.*, No. 1988. *Smith in Gard. Chron.*, July 15, 1882, with figs. 11 to 13.

On fronds of Hart's tongue fern, Tregony, Cornwall.

COMING FUNGUS FORAYS.

EPHING FUNGUS FORAY.—The Essex Field Club has fixed Saturday, the 23rd September, for the Foray. The meeting place to be the Loughton Station, the first train from London after two o'clock p.m. When the party has assembled, to proceed towards Highbeeche.

WOOLHOPE FUNGUS FORAY.—To assemble at Hereford on and after Monday, October 2nd. The Club Foray to take place on Thursday, October 5th.

CRYPTOGAMIC SOCIETY OF SCOTLAND.—The Eighth Annual Conference will be held at Kenmore, Perthshire, on September 4th and following days, under the presidency of Professor J. W. H. Trail, M.A., M.D., F.L.S. Fellows who purpose being present are requested to communicate as soon as possible with F. Buchanan White, Hon. Sec., Perth.—At a meeting of Council held in Aberdeen on July 26th, it was unanimously agreed that, in consequence of the lamented death of the President, Dr. Dickie, F.R.S., one of the founders of the Society, the meeting and public show arranged to take place in Aberdeen should be postponed till another year, and that instead a meeting should be held in some central place where there would be an opportunity of studying the Cryptogamic Botany of the higher hills.—Kenmore may be reached from Aberfeldy, on the Highland Railway, or from Killin Station, on the Callander and Oban Railway. It is situated at the east end of Loch Tay (on which a steamer has now been placed). The immediate neighbourhood has been favourably reported on as presenting a presumably rich fungus-flora, while Ben Lawers and other mountains are distant only a few miles, as is the celebrated Fortingal yew, supposed to be the oldest living tree in Europe.

MICRO-FUNGI.*

We are always glad to see well-directed efforts for the spread of scientific knowledge, and one of its means is the publication of cheap manuals, but the great essential of these is strict accuracy, or the injury they cause is proportioned to the extent of their distribution. We were quite disposed to welcome a little book on "Micro-fungi," at one shilling, in which, under each month, an "Old Collector" relates the species most likely to be found and where to find them. The idea is a very good one, and, with a little more care, might have been successfully carried out. It was hardly to have been expected that the erudite author, starting with a Latin quotation at page 12, would have permitted seventy-seven Latin names to have passed him, in the course of ninety pages, uncorrected and inaccurate. The beginner at a study has a right to expect that what he is learning will not have to be unlearned again, and that the Latinity to which he is so freely introduced, will pass muster. Hence we regret to observe so obvious a mistake as sending out the printer's proofs with the orthographical errors unrevised. This might be tolerated in a local newspaper, but hardly in a scientific "Handbook."

* "Micro-fungi, When and Where to Find Them." By Thomas Brittain, Manchester.

FUNGI MACOWANIANI.

BY REV. C. KALCHBRENNER.

(Concluded from Vol. x., p. 147.)

HYPODERMEI, *De Bary.*

Ustilago Dregeana, Tul. Conf. Kärnicke Myc. Beitr., p. 26. Montg. Ann. d. Sc. Nat. VII., 1847, p. 176. Thumen in Flora, No. 115.

Sub nom. *Ustilago Carbo*.

Somerset East, leg. MacOwan, No. 1363. Planta nutritrix est *Cynodon dactylon* L., ejus inflorescentiam, adhuc in vagina latentem, prorsus deformatam, pulvere atro obducit. Sporæ minutæ .012-.015 mm. diam., leviter tuberculatæ.

Ustilago sacchari, Rabenh. Sitzungsber. d. Ges. Isis, 1870, IV.

Sporis globosis, lævibus, .015-.018 mm. diam., atrofusciis.

Port Natal, leg. J. M. Wood.

In canibus et paniculis *Sacchari officinalis*, præsertim in var. ejus "chinensi."

Cel. Rabenhorst speciei suæ, in *Eriantho Ravennæ* nascenti, sporas tribuis, flavo-fuscas, exasperatas .007-.010 mm. diam.

Ustilago Danthoniæ, K.

Sporis globosis .036 mm. diam., granulosis, atro-fuscis.

In spicis *Danthoniæ papposæ*, Nees. In summo monte Chumberg, prope stationem Missionis evangelicæ "Lovedale" dictam leg. Rev. T. Buchanan. Haud procul distat *Ust. Salveii*, Cooke Brit. Fung. II. p. 514: Sed hæc soris linearibus folia modo occupat, non vero spicas.

Ustilago Carbo, *De C.*

In *Arenæ* leg. ad Somerset East, MacOwan, No. 1237.

Uromyces Aviculariæ (P.) Schröt. Die Brand. und Rostpilze Schles., p. 8.

II. Fung. stylosporus = *Uredo aviculariæ*, Alb. et Sch.

In fol. vivis *Polygoni avicularis*, L., ad Somerset East, No. 1353.

I. et III. desunt.*

Uromyces Rumicum (D.C.) Lev. Ann. d. Sc. Nat. Bot., 1847.

I. *Æcidium Rumicis*, Gmel. = *Æcid. rubellatum*, Cooke Brit. Fung.

II. *Uredo Rumicum*, D.C. Thum. l.c. 85.

III. Non observatum.

In fol. viv. *Rumicis obtusifolii*, L. et R. Ecloni Meissn. Somerset East, No. 1308.

Uromyces microsorus, K. & C.

I. (Ignoti).

II. Hypophyllus. Soris minimis, pallidis. Stylosporis globosis brunneis .022-.025 mm. Episporio asperulo.

* No. I. = Fung. hymeniferus. II. = stilosporiferus. III. = telentosporiferus, designatur.

III. Soris compactis minimis (in consortio) ochraceis. Teleutosporis amygdaliformibus, pallido-fuscis $\cdot 03 \times \cdot 018\text{--}02$ mm.; episporio supra incrassatis.

In foliis ignotis (potius *Drupaceæ*).

Closely allied to *Uromyces Amygdali*, Pass.

Uromyces Valerianæ, Fuckel. Symb. Myc., p. 63.

I. *Æcidium Valerianacearum*, Duby.

II. = *Uredo Valerianæ*, D.C. Thum. l.c. 112.

III. Non obs.

In *Valeriana capensi*, Thunb. Som. East in mont. Boschb., No. 1057.

Uromyces Phascolorum, D.C.

I. *Æcidium Leguminosarum*, Link., pr. p.

II. *Uredo Dolichi*, B. et Br. Fung. of Ceyl., 829 = *Caeoma rufum*, Bon. ?

Et III.

Som. E. in *Dolicho gibboso*, Thunb. Port Natal, No. 40.

Uromyces Urgines, Kalch.

I. Sporangiis hypophyllis, paucis, in macula flava congestis, cylindrico-elongatis, apice truncatis, pallide flavis.

II. Soris subamphigenis, sparsis, parvis, aurantiis, plerumque maculae discolori, purpureo-cinctæ, insidentibus; sporidiis globosis = *Uredo Lepisclinis*, Thum. in Flor., No. 81.

III. In iisdem soris sporidia breviter ovata $\cdot 06\text{--}07$ mm. longa, breviter pedicellata, fusca.

Som. East in *Helychryso petiolato*, D.C., raro.

Uromyces Thwaitesii, B. et Br.

In fol. viv. *Sida rhombifolia*. Port Natal, No. 406.

Uromyces Ipomaeæ, Berkl.

I. = *Æcidium Ipomaeæ*, Thum. in Flor., 1878, No. 23 (107).

II. et III. = *Uredo aterrima*, Thum. l.c. 114.

In fol. viv. et fructibus immaturis *Ipomaeæ argyrioides* Chois. Som. E., No. 1225, 1226.

Sporæ aberrantes, sed certissime *Uromyces*. Affinis *Urom. sphæropleo*, Cke. Species pulcherrima!

Uromyces Geranii, Otth. et Wartm.

I. *Æcidium Geranii*, Otth. et Wartm = *Æc. Pelargonii*, Thum. l.c. 89 ?

II. *Uredo Geranii*, D.C. Thum. l.c. 113 ?

III. Non obs.

In fol. vivis *Geraniorum*. Som. E., No. 1114 et 1154.

Conf. Thum. l.c. 47, 59.

Uromyces Prunorum v. Amygdali, Grevill. VII., p. 12.

II. Sporidia ovata, apiculata. In *Pucc. Cerasi*, Cda. Uredo-sporæ globosæ, echinulatæ.

In fol. viv. *Persicæ vulgaris*, Mill. Som. E., No. 1104. Ad *Bazuja Caffrariæ*, leg. Rev. Baur, No. 656.

Uromyces Fabæ (P.) Schröt. in Hedwigia, 1875. Thum. l.c. n. 30.

II. et III. In fol. vivis *Fabarum hortensium* ad Som. E. leg. M.Ow. et Tuck., No. 1056.

Uromyces Junci, Schw.

II. In *Junco punctorio*, Thunb. ad Klyn Visch. Rivier., No. 1315.

III. Non obs.

Uromyces proeminens, Lev.

I. *Æcidium Euphorbiæ*, P. ?

II. et III. Non observati.

Ad fol. viva *Euphorb. inæquilateræ*, Sond., in campis hortisque. Som. E., No. 1247.

Uromyces albucæ, K. et C.

II. = *Uredo sempertecta*, Thum. l.c., No. 60. Soris amphigenis, sparsis, elevatis, epidermide tectis, demum rima longitudinali apertis; sporis subglobosis, 0.22×0.18 mm., episporio inconspicue punctulato, tenui, dilute flavis.

In fol. viv. *Albucæ aureæ*, Jacq., et *A. minore*, Jacq. Boschberg, No. 1252.

III. *Uromyces alliorum*, Welwitsch. Fung. angolensis. In *Albucæ juncifolia* ?

Ab *Urom. alliorum*, Berk. in Welwitsch. Crypt. Lusit. No. 22, diversus.

Uromyces Bulbines, Thum. l.c., No. 79.

II. et III. In fol. viv. *Bulbines latifoliæ*, Schult. Somerset E., No. 1019.

Cum *Uredine ambigua*, D.C., soris oblongis aut linearibus gaudente, hand jungendus; sed ab *Urom. concentrico*. Lev., vix distinctus.

Uromyces Betæ, Tul.

II. In fol. viv. *Betæ vulgaris* hortorum.

Som. E., No. 1034.

Uromyces Cluytiæ, Kalch. et Cke.

II. Soris hypophyllis, majusculis, sparsis, pulvinatis, epidermide vix colorata, demum rimose dehiscente tectis; sporis subglobosis 0.2 mm. diam., pallide flavo-fuscescentibus.

P. Natal in *Cluytiæ* spec., by Wood, No. 52.

III. Soris hypophyllis, solitariis, minutis subpunctiformibus, umbrinis; sporis ovato oblongis, $0.4-0.45 \times 0.2$, episporio granulato tuberculato, pulchre ferrugineo, stipite crasso, æquali.

In *Cluytia pulchella*, ad. Som. E., by M.Owan, No. 1325. Port Natal, by J. M. Wood, No. 51.

Uromyces papillatus, Kalch. et Cke.

II. *Uredo Heteromorphæ*, MacOwan in litt. Soris hypophyllis, irregulariter sparsis, minutis, fulvis, maculæ plerumque angustæ, flavæ insidentibus; sporis heteromorphis, pallidis, 0.2×0.1 vel 0.3×0.12 mm., episporio crasso, echinulato.

III. *Uromyces heteromorphæ*, Thumen (?) l.c. 80. Sporidiis ovatis, 0.3×0.18 mm., pedicellatis, fulvis echinulatis, apice pa

pilla hyalina instructis, et nonnunquam fere rostratis. Haud multum distat ab *Urom. apiculata*.

In fol. viv. *Heteromorphæ arborescentis*, Cham. et Schld. in mont. Boschberg, No. 1144 et 1021. In posteriore planta, quam Thumen pro oculis habuit. Spora immaturæ videntur; et hac de causa, diagnosis ejus a nostra differt.

***Uromyces eriospermi*, K. et Cke.**

Soris hypophyllis, inter-venas folii parallelas sparsis, bullatis.

II. Sporæ subglobosæ, $\cdot 015$ mm. diam., echinulatæ, flavæ.

III. Sporæ subpyriformes, $\cdot 03 \times \cdot 015\text{--}\cdot 02$, longe pedicellatæ.

In *Eriospermi* sp. Som. E., No. 1402.

C. MICRO-UROMYCES, *Schröt.*

***Uromyces lugubris*, Kalch.**

Soris indefinite confluentibus, liberis, planis, hypophyllis, nigricantibus.

III. Sporidia ovata, vix diaphana, $\cdot 024 \times \cdot 18$ mm., pedicello longo hyalino suffulea, atra.

In planta non-determinata. P. Natal, No. 15.

E. soris illimitate confluentibus folii pagine inferior fere tota quasi fuligine conspurcata apparet.

(Non vidi *Cooke*.)

***Uromyces Oxalidis*, Lev.**

I. *Æcidium oxalidis*, Thum. l.c., No. 40.

In Oxalide purpurata, Jacq. Som. E., No. 1042.

III. In fol. vivis *Oxalid. corniculatæ*, S.

Som. E., No. 1295.

Species dubia, sporis haud evolutis.

In soris adest *Darluca filum*, Castg.

***Uromyces Polemanniæ*, Kalch et Cke.**

III. Soris epiphyllis, sparsis, apertis, planiusculis, umbrinis; sporidiis ovalibus $\cdot 025 \times \cdot 015$ mm. apiculatis, pedicello longo instructis, fuscis, episporio minute granulato vel reticulato.

In fol. viv. *Polemanniæ grossulariæfoliæ*.

E. et F., Somers. E., No. 1030.

***Uromyces Trollipi*, K. et M. Or.**

Soris hypophyllis, sparsis, punctiformibus; sporis subglobosis, brunneis, haud stipitatis $\cdot 022\text{--}\cdot 025 \times \cdot 02$ mm., episporio hyalino, crasso.

In fol. *Hypophylli fætidi*, Schrad. ad mont. Kagaberg pr. oppid. Bedford, leg. Stud. Trollip, No. 1404.

***Puccinia lycii*, K.**

II. et III. Soris amphigenis, sparsis vel in maculas congregatis, apertis, planiusculis. Stilosporis sphaeroideis, $\cdot 016 \times \cdot 018$ mm. flavidis; teleutosporis ellipticis, utrinque rotundatis, $\cdot 03 \times \cdot 024$ mm., opacis, fuscis, epidermide granulata, pedicello æquilongo aut longiore.

Som. E., leg. MacOw., No. 1410. In *Lycio tubuloso*.

Puccinia granularis, *K. et C.*

II. & III. Stilosporis subglobosis, $\cdot 025\text{--}\cdot 028 \times \cdot 02$ mm. granulatis, fuscidulis (= *Uredo Pelargonii*, Thum.). Telentosporis immixtis ellipticis, utrinque attenuatis, supra subpapillatis, lacte, brunneis, medio leviter constrictis, laevibus, $\cdot 04 \times \cdot 02$ mm., pedicello brevioribus.

In fol. *Pelargonii*. P. Natal, 10.

Puccinia menthæ, *P.*

I. *Æcidium menthæ*, D.C.

II. *Uredo Menthæ*, P. (Som. East, No. 1158), cum III.

In fol. vivis *Menthæ silvestris*, L. Som. E., No. 1150. P. Natal, No. 112.

Forma, *Leonotidis*, No. 1330.

Puccinia caricina, *D.C.*

I. = *Æcidium urticæ*, Schum. et III. non observ.

II. Stilosporæ in fol. et bracteis *Cyperi marisci*, Nees., et *Cyp. tenuiflori*, Nees, Som. E., No. 1018. In *Carice pendula*, No. 1353.

Puccinia striæformis, *Westd.*

I. = *Æcid. asperifolii*, P., et III.

Puccinia straminis, Fuckel, non obs.

II. = *Uredo Rubigovera*, D.C. Forma, *Digitariæ sanguinalé*. Thum. in Flor., 1875, No. 24. In *Digit. sanguinali*.

Som. E., 1113. In *Avena sativa*.

Som. E., No. 1237, in gram. ignoto. P. Natal, No. 113.

Puccinia coronata, *Cda.*

I. = *Æcidium Rhamni*. II. et III. non observ.

In fol. viv. *Rhamni prinoides*, L'Herit.

Som. E. Boschberg, No. 1279.

Puccinia phragmitis (*Schum.*) *Körn.*

II. et III. Ad fol. viv. *Phragmitis communis*, L., Som. E., in ripis Klyn Visch. Rivier, No. 1316.

Inter stilosporas subglobosa observavi et alias majores, dacryoides, $\cdot 03 \times \cdot 015$ mm., episporio lævi. An ad *Pucc. Magnusianam*, referendæ?

Puccinia maydis, *Poetsch.*

In fol. *Zæ.* Som. E., No. 1410.

Absque maculis, a *P. purpurea*, Cke., distincta.

Puccinia purpurea, *Cke.* in Grevillea.

II. = *Trichobasis purpurea*, Cke. II. *Pucc. purpurea*, Cke. Sporis $\cdot 04\text{--}\cdot 045 \times \cdot 022$ mm., in maculis purpureis.

In fol. viv. *Zæ.* Som. E., No. 1257. P. Natal, No. 229.

Ab *Uredine Maydis*. Desm. multum distat.

Puccinia æthiopica, *K. et Cke.*

I. Non observ.

II. Soris hypophyllis, gregariis, apertis, planiusculis, rufo fuscis. Stilosporis sphaeroideis, rarius subellipsoideis, $\cdot 018 \times \cdot 020$ mm., echinulatis, flavis.

III. Soris hypophyllis dense disseminatis, apertis, planis, atrofuscis. Telentosporis breviter ovatis vel subglobosis $\cdot 028\text{--}\cdot 30 \times$

·024-·026 mm. ad septum vix constrictis, articulis æqualibus utrinque obtusissimis, fuscis, vix diaphanis; pedicello hyalino, flexuoso, sporas longitudine superante.

In *Stachyde grandifolia* et *St. æthiopica*, E. Mey ad Somerset E., No. 1252. P. Natal, No. 47. In *Leonotide ovata* L., ad mont. Boschberg, No. 1330.

A *Pucc. Stachydis*, D.C., differt, soris atro-brunneis, nec fersugineis, sporisque robustioribus obscurioribus, pedicello multo longiore instructis.

Puccinia gladioli, *Castg.*

II. In *Gladiolo Eckloni*, Lehm., ad Bazuja, Caffraria, leg. Rev. Baur.

III. Non obs. Thum. l.c., No. 5.

Puccinia Salviæ, *Ung.*

II. *Uredo labiatarum*, D.C., pr. pr.

III. Soris epiphyllis, minimis, sparsis; sporidiis apioe obtusis, basi cuneatis, medio parum constrictis, breviter pedicellatis.

In *Salviæ* sp., ad Port Natal, leg. Wood, No. 27.

Puccinia Plectranthi, *Thum.* Flora, 1875, 24, No. 1.

II. et III. In fol. vivus, *Plectranthi taxiflora*, Berk. Som. E., 1106 et 1136. P. Natal, No. 1 et 5.

Puccinia Lychnidearum, *Fuekel.*

II. *Uredo Silenes*, Schleditd.

III. Non obs.

In *Silene capensi*, Ott. Boschberg, No. 1143.

In *Dianthi barbato*. Som. E., No. 1332.

Thum. l.c., 82.

Puccinia Pachycarpi, *K. et C.*

II. Soris amphigenis, sparsis, solitariis vel confluentibus, primum epidermide tectis, pulvinatis, rufo-fuscis. Sporis ovato-globosis ·018-·02 mm.; episporio crasso, ruguloso.

III. Telentosporæ in iisdem soris oblongo-clavatæ, medio constrictæ, articulo inferiore in stipitem longissimum angustato, sine stipite ·06 mm.

In fol. vivis *Pachycarpi grandiflori*, D.C. Som. E., No. 1327. P. Natal, No. 36.

Puccinia Cephalandræ, *Thum.* Flora, 1876, No. 27 (111).

II. = *Uredo dolichospora*, K. olim. Sporidia ovato-oblonga ·02 × ·045 mm., glabra.

In iisdem cum III. soris.

In fol. viv. *Cephalandræ quinquelobæ*, Schrad., leg. MacOwan., No. 1146.

Puccinia exhauriens, *Thum.* Flora, 1876, No. 27.

II. et III. In fol. viv., *Jasmini tortuosi*, leg. MacOw., No. 1139.

Puccinia Stobææ, *MacOw.*

I., II., & III. *Æcidium Stobææ*, K. & C.

Sori hypophylli, subtomento arancoso folii latentes, demum etiam amphigeni sparsi, vel in accrois irregulares confluentes, atrofusci.

In II. stilosporæ globosæ ·015-·018 mm., echinulatæ.

In III. teleutosporæ ellipsoideæ, medio leviter constrictæ, fuscæ, pedicello sporæ aequilongo.

In *Stobea membranifolia*, D.C., et *Stob. speciosa*, D.C. Som. E., No. 1309. P. Natal, No. 62, 63, 67, 74.

Pucc. Hieracii affinis (Cooke).

Puccinia carbonacea, K. et C.

II. Soris hypophyllis in acervulos rudes confluentibus, nigricantibus; stilosporis subglobosis ·018 mm. flavo-fuscis.

III. Teleutosporis in iisdem soris breviter ovatis ·024 × ·02 mm., medio constrictis, breviter pedicellatis fuscis. Dissepimentum in plerisque ita obsoletum, ut Uromycetem mentiantur.

In *Abutili* sp. leg. MacOw., 1275. P. Natal, No. 23 et 111. In *Sida rhombifolia*, 406.

Puccinia exanthematica, MacOw.

III. Soris hypophyllis, distinctis, maculæ latæ, disciformi, carneo-purpurei coloris insidentibus, circinantibus, primum aurantiis demum ochraceis; sporis cylindricis ·024 × ·016 mm., pedicello æquilongo, flavidis, exosporio crassiusculo lævi.

In *Crassulæ* sp. Som. E., No. 1242 et 1347.

Pulchram iconem misit Domina Holland ex Port Elizabeth.

Puccinia æcidiiformis, Thum. Flora, 1875, No. 24.

In fol. viv. *Nidorellæ mespilifoliæ*, D.C. Boschberg, No. 1105.

Puccinia Malvacearum, Montg.

In fol. *Althææ roseæ* hortorum et *M. parvifloræ*, L. Som. E., No. 1117, 1135.

Thum. l.c., No. 6, 110.

Puccinia Momordicæ, K. et C.

III. Soris hypophyllis, sparsis, minutis, apertis, brunneis, folio absque macula insidentibus. Telentosporis ovatis, obtusis, medio haud constrictis ·03 × ·018 mm., breviter pedicellatis; lævibus.

In fol. viv. *Momordicæ cordifoliæ*, Sond. P. Natal, No. 141.

Puccinia Rhynchosiaæ, K. et C.

II. *Uredo* (*Trichobasis*) *Rhynchosiaæ*, K. Soris hypophyllis, segetis regularis instar folii paginam inferiorem occupantibus, punctiformibus, rufis; stilosporis globosis ·02 × ·022 mm., fuscidulis.

III. Non obs.

In *Rhynchosia* sp. P. Natal, No. 29.

Uredo Commelyneæ, K.

Soris hypophyllis, in acervulos oblongos congestis, ochraceo-fuscis; stilosporis variis subglobosis, ovatis pyriformibus, ·021 mm. long., ·015 mm. crass., pellucidis, glabris, flavidis.

In *Commelyna* sp. P. Natal, No. 231.

Uredo Moreæ, K.

Soris epiphyllis, ellipsoideis, rima longitudinali dehiscentibus, epidermide pallide flava cinctis; stilosporis globosis ·018-02 mm., flavo fuscidulis.

In fol. viv. *Moræ grandifloræ*, Thunb. Som. E., No. 1065, 1240.

Uredo mixta, Kunz. Thum. l.c., No. 10.

In *Salice capensi*, Thunb. Som. E., No. 1029.

Uredo Polygalæ, K.

Soris hypophyllis sparsis confluentibusve subprominutis, primum epidermide tectis, ochraceis, maculæ flavæ innatis. Stilosporis ovato-rotundis $\cdot 015\text{--}\cdot 018$ mm., episporio crasso, lævi, flavidis.

In fol. viv. *Polyg. Ohlendorffianæ*, E. et J. Somers. E., No. 1228.

Facile Puccinia, teleutosporis ignotis (Cke.).

Uredo Ecteinanthi, K.

Soris hypoph. sparsis, minutis, ochraceis; stilosporis ovato-rotundalis et irregularibus $\cdot 03 \times \cdot 024$ mm., flavis, epidermide lævi.

In *Ecteinantho proluxa*, Nees. Grahamstown, leg. MacOw., No. 1258.

Uredo Pycnostachydis, K.

Soris hypophyllis, sparsis, minutis, prominulis, dilute ochraceis; stilosporis sphæroideis et difformibus $\cdot 02\text{--}\cdot 003$ mm., granulatis, flavidis.

In *Pycnostachyde reticulata*, Bk. P. Natal, Inanda, No. 30.

Uredo linearis, Pers.

In gramine indetermin. P. Natal, 113.

Uredo Leguminosarum, Link.

In Leguminosa indetermin. P. Natal, 199.

Uredo Rumicum, D.C.

II. In Rumice indetermin. Port Nat., 115.

I. = *Æcidium Rumicis*, Hoffm. Thum. l.c., 108, in Rumice Eckloniana Meissn.

Uredo Myrsiphylli, Thum. Flora, 1877, 26.

I. *Æcidium Myrsiphylli*, K. Sporangiis hypophyllis, maculæ flavæ insidentibus circinatim congestis, semiimmersis, urceolatis, margine subintegro.

II. Stilosporæ vid. Thum. l.c.

In *Asparago* (*Myrsiphylllo*) *medioloides*, Thunb. P. Natal, No. 209. Som. E., No. 1280.

Uredo Filicum, K?

In pinnulis *Aspidii capensis*, Willd. Som. E., 1025.

Huc fors *Caeoma nervisequum*, Thum. l.c. 91.

Uredo transversalis, Thum. l.c., No. 62.

In fol. viv. *Tritoniæ* (*Manbretiæ*) *securigeræ*, Ker. Som. E., No. 1254. In *Gladiolo Saundersii*, Hook. fil.

Uredo (Lecythea) Ricini, Bernh. Thum. l.c., No. 11.

In fol. vivis *Ricini communis*. Som. E., No. 1028.

Æcidium ornamentale, K. in Flora, 1876, p. 362, No. 39.

In surculis ramulisque *Acaciæ horridæ*, L. Som. E., leg. MacOwan, No. 1044. Species pulcherrima!

Æcidium inornatum, K.

Soris hypophyllis, sparsis, prominulis, vix apertis, pallidis.

In fol. viv. *Acaciæ horridæ*, L., cum *Ravenelia glabra*, K. et C. Somerset East, leg. MacOw., No. 1436.

Æcid. ornamentale, K., ramulos *Æ. horridæ* occupat et detorquet, folia non tangit. In hac vero specie multo teneriore nec unquam elongata contrarium accidit.

Æcidium Compositarum, D.C.

In fol. *Conyza ivæfoliæ*, Less. *Con. pinnatilobæ*, D.C. et *Con. podocephalæ*, D.C. Som. E., No. 1318, 1037. P. Natal, No. 18.

Æcid. MacOwanianum, Thum. l.c., No. 12 et 13, vix differre videtur.

Æcidium Senecionum, Desm.

In fol. viv. *Senecionis deltoidis*, Lev. *Sen. quinquelobi*, D.C. Som. E., No. 1026, 1033. In *Sen. micanoides*, Ott. P. Natal, No. 116.

Thum. l.c., No. 41, 86, 109.

Æcidium albilabrum, K. Thum. in Flora, 1875, No. 31.

In fol. viv. *Alepidæ amatymbicæ*, F. et J., et *Al. ciliaris*, La Rosch. Som. E., 1053.

Æcidium Crini, K.

Sporangius hypophyllis, variis amphigenis in maculis olivaceo-fuscis, dimidium pollicem et ultra latis, rotundis vel ellipticis, congestis, ochraceis, profunde urceolatis, margine reflexo, pulverulento.

In fol. viv. *Crini capensis*, Harv. P. Natal, No. 68.

Æcidium Cussoniæ, K.

Sporangiis hypophyllis, in macula fuscescente congestis, semimersis, concavis, ochraceis, ore subintegro.

In fol. *Cussoniæ spicata*, Thunb. P. Natal, No. 88.

Æcidium Hartwegiæ, Thum. l.c., 88.

= *Æcid. chlorophylli*, MacOw. in litt.

In fol. viv. *Chlorophylli (Hartwegiæ) elati*, R. Br. (teste Backer). Som. E., No. 1022.

In circulo *Æcidiorum* haud raro advest. Phoma, procut dubio *Spermogonia Æcidii*, Conf. De Bary uber die Brandpilze.

Hamaspora longissima (Thum.), Körn. Myc. Beitr., p. 16.

I. = *Uredo lucida*, Thum. l.c., 63.

II. *Phragmidium longissimum*, Thum. l.c.

In fol. viv. *Rubi rigidi*, Sond. Som. E., No. 1024. P. Natal, No. 24.

Genus insigne, medium tenens inter *Phragmidium* et *Podisoma*.

Coleosporium detergibile, Thum. l.c., No. 8.

In fol. viv. *Plectroniæ (Psilostomæ) ciliatæ*, Dietr. Som. E., No. 1107.

DIORCHIDIUM, Kalch.

Sporidia didyma, testiculæformia, basi connata, pedicello communi verticaliter insidentia.

Diorchidium Woodii, K. et C.

Soris hypophyllis, sparsis, liberis, planis, atris; sporidiis binis juxta se positis, ovatis $0.02-0.024 \times 0.016-0.018$ mm., exinie echinu-

latis, brunneis, in pedicello sursum incrassato, quam spora duplo longiore.

In fol. viv. *Milletiæ caffræ*, Meissn. P. Natal, No. 70. (Observante Cookio.)

Vix differt *Triphragmium binatum*, Berk. in Amer. Acad. Sci. p. 125. "Sporis fuscis, biccëllulosis, spinis emarginatis, asperis, dissepimento verticali, membrana exteriore deglubente" (e Nicaragua). Sed nomen "*Triphragmium binatum*" contradictionem in adjecto exhibet!

Phragmidium obtusum, Tul.

II. = *Uredo Potentillarum*, D.C., conf. *Coleosporium ochraceum*, Thum. l.c., 9.

III. Non obs.

In fol. viv. *Agrimoniæ Eupatoriæ*, L., var. *capensi*. Som. E., No. 1113.

Phragmidium Rosarum, Rbh.

I. et. III. In *Rosa centifolia*. Som. E., No. 1343.

Cystopus candidus, Lev.

In fol. *Brassicæ Napæ*, L., et *Cardamines Africanæ*, L. Som. E., No. 1248, 1287. P. Natal, 199.

Cystopus Portulacæ, D.C.

In *Portulaca oleracea*, L. hortorum. Som. E., No. 1303.

Cystopus Amaranthi, Berk. (?)

= *Cyst. Bliti*, Thum. l.c., 116. Oogonia desunt. hinc sp. dubia. Conidia ut in *C. amaranthi*, B.

In fol. *Cyathulæ lappulacæ*, Mog. Tand. Som. E., No. 1313.

HYPHOMYCETES.

Ceratium hydroides, Fr. · MacOw., 1050.

Stilbum (?) physarioides, K.

Som. East (MacOwan).

Stilbum fimetarium, P.

In excrementis Hyræis capensis. MacOw., No. 1178.

var. *Simiarum*. In excrem. *Cynocephalorum*, MacOw., 1382.

Vulgari forma mullo major.

Fusarium roseum, Lk.

Au durren Stengel von *Datura Tatula*, L. MacOw., 1068.

Verticillium pulvinulum, K. et C.

In foliis emorientibus Aloës. MacOw., 1170.

Album, hyphis verticillato ramosis, sporis oblongis.

Sporotrichum epiphyllum, Link.

In fol. mort. *Pelargoniorum*. MacOw., 1171.

Primo albidum demum cæsiûm.

Dendryphium MacOwanianum, Thum. in Flor., 1877, No. 26.

MacOw., 1285.

Sporidesmium polymorphum, Cda.

Cape, MacOwan, 1432.

AUSTRALIAN FUNGI.

BY M. C. COOKE.

*(Continued from Vol. x., p. 136.)*ORD. IV. **THELEPHOREI**, Fr.Gen. 1. CRATERELLUS, Fr. *Gen. Hym.***Crat. pusio**, Berk. *Fl. Tasm.* II., 258.

Tasmania.

Crat. confluens, B & Curt. *Linn. Journ.* IX., 423.

Endeavour River.

Gen. 2. CLADODERRIS, Pers.

Clad. dendritica, Pers. in Freyc. *Voy.*, t. 1, f. 4.

Victoria, N. S. Wales.

Clad. Australica, Berk. in *Herb.*

N. S. Wales.

Pileo umbrino.

Gen. 3. LACHNOCLADIUM, Lev.

Lach. furcellatum, Lev. *Ann. Sci. Nat.*, 1846, 159.

Queensland.

Gen. 4. THELEPHORA, Ehrh.

Thel. decolorans, Berk. & Curt. *Linn. Journ.* x., 328.**Thel. congesta**, Berk. *Linn. Journ.* XVI., 168.

Victoria, N. S. Wales, Queensland.

Thel. intybacea, Fr. *Hym. Eur.*, 635.

N. S. Wales.

Thel. exsculpta, Berk. *Linn. Journ.* XVI., 168.

Victoria.

Thel. riccioidea, Berk. *Fl. Tasm.* II., 258.

Tasmania.

Thel. Archeri, Berk. *Fl. Tasm.*, t. 183, f. 2.

Tasmania, Victoria.

Thel. viridis, Berk. *Fl. Tasm.* II., 258.

Tasmania.

Thel. caryophyllea, Fr. *Hym. Eur.*, 634.

W. Australia.

Thel. conrescens, Fr. *Pl. Preiss.*, 136.

W. Australia.

Thel. lamellata, B. & Curt. *Sill. Journ.*, 1851, 95.

Queensland.

Thel. myriomera, Fr. *Pl. Preiss.*, 137.

W. Australia.

Thel. pedicellata, Schw. *Syn. Car.*, 108.

Queensland.

Gen. 5. STEREUM. *Fries.*

Stereum caperatum, *B. & Mont. Syll.*, 175.

Daintree River, N. S. Wales, Lord Howe's Island.

Stereum elegans, *Fr. Epic.* 545.

Victoria, N. S. Wales, Queensland.

Stereum Thozetii, *Berk. Linn. Journ.* XVIII., 385.

Queensland, S. W. Australia, Victoria.

Stereum nitidulum, *Berk. Hook. Journ.*, 1845, 638.

Queensland, Endeavour River.

Stereum lobatum, *Kze. in Fr. Epic.*, 347.

Victoria, N. S. Wales, Queensland, New Guinea.

Stereum Boryanum, *Fr. Epic.*, 547.

Queensland, Daintree River.

Stereum Sowerbeyi, *Berk. Fr. Hym. Eur.*, 633.

N. S. Wales, Tasmania, Victoria.

Stereum versicolor, *Fr. Epic.*, 547.

Victoria.

Stereum semilugens, *Kalch. Grevillea IX.*, p. 1.

Queensland.

Stereum luteobadium, *Fr. Epic.*, 547.

N. S. Wales.

Stereum striatum, *Fr. Hym. Eur.*, 641.

N. S. Wales.

Stereum prolificans, *Berk. (ined.)*

N. S. Wales, Queensland.

Stereum hirsutum, *Fr. Hym. Eur.*, 639.

W. Australia, S. Australia, Tasmania, Victoria, N. S. Wales, Queensland.

Stereum spadiceum, *Fr. Hym. Eur.*, 640.

Victoria, Tasmania, N. S. Wales, Queensland.

Stereum purpureum, *Fr. Hym. Eur.*, 639.

W. Australia, S. Australia, Victoria, Tasmania.

Stereum radiato-fissum, *B. & Br. Linn. Trans. (ined.)*

Queensland.

Stereum Schomburgkii, *Berk. Linn. Journ.*, XVI., 168.

N. Australia, Queensland.

Stereum illudens, *Berk. (=S. decipiens, B.) Hook. Journ.*, 1845.

Victoria, N. Australia, W. Australia, S. Australia, Tasmania, N. S. Wales, Queensland.

Stereum vittæforme, *Fl. Pr. Preiss.*, 137.

W. Australia.

Stereum spongiæpes, *B. & Br. Linn. Journ.* XVIII., 385.

Illawarra.

Stereum Ostrea, *Nees. Fr. Nova. Sym.*, 93.

Queensland.

Stereum confusum, *Berk. (ined.)*

W. Australia.

Stereum vellereum, *Berk. Fl. N. Zeal.* II., 183.

Victoria.

Stereum sulfureum, *Fr. (fide Berk. in Grev. i., 164).*
Queensland.

Stereum concolor, *Berk. Fl. Tasm. II. 259.*
Tasmania.

Stereum acerinum, *Fr. Syst. Myc. i., 453.*
Tasmania.

Stereum umbrinum, *Fr. Pl. Priess, 137.*
W. Australia.

Stereum rugosum, *Fr. Hym. Eur., 643.*
Clarence River.

Gen. 6. **AURICULARIA**, *Bull.*

Auricularia albicans, *Berk. Linn. Journ. XIII., 170.*
Queensland.

Auricularia minuta, *Berk. Hook. Journ.*
W. Australia, Tasmania.

Auricularia pusio, *Berk. in Linn. Journ. XVII., p. 386.*
Queensland.

Auricularia lobata, *Fr. Hym. Eur., 646.*
Queensland.

Auricularia mesenterica, *Fr. Hym. Eur., 646.*
Queensland.

Gen. 7. **DICTYONEMA**. *Bl. & N.*

Dictyonema æruginosum, *Nees Acta. N. Cur. XIII., t. 2.*
Queensland, Daintree River.

Gen. 8. **HYMENOCHÆTE**, *Lev.*

Hym. strigosa, *B. & Br. Linn. Journ. XIV., 68.*

Hym. rubiginosa, *Lev. Ann. Sci. Nat., 1846, 151.*
W. Australia, Tasmania.

Hym. phæa, *Berk. Grevillea, VIII., p. 146.*

Hym. cacao, *Berk. Linn. Journ. x., 333.*
Queensland.

Hym. tenuissima, *B. & Br. Linn. Journ. x., 333.*
Queensland.

Hym. Archeri, *Berk. Fl. Tasm., II., 259.*
Tasmania.

Hym. vinosa, *Berk. Grevillea VIII., 149.*
W. Australia.

Hym. Mougeotii, *Fr. Hym. Eur., 654.*
Tasmania.

Hym. crassa, *Lev. Grevillea VIII., 148.*

Gen. 9. **PENIOPHORA**, *Cke.*

Pen. papyrina (*Mont.*) *Cke. Grevillea VIII., 20.*
Victoria.

Pen. tephra (*B. & C.*) *Cke. Grevillea VIII., 20.*
S. Australia.

Pen. deglubens (*B.*) *Linn. Journ. XVIII., 385.*

Pen. sparsa (B.). *Cke. Grevillea* VIII., 21.
Queensland.

Gen. 10. **CORTICIUM**, *Fr.*

Cort. cæruleum, *Fr. Hym. Eur.*, 651.
N. S. Wales, Queensland.

Cort. Auberianum, *B. & Mont. Cuba*, 372.
Victoria.

Cort. arachnoideum, *Berk. Fr. Hym. Eur.*, 649.
S. Australia, Tasmania.

Cort. læve, *Fr. Hym. Eur.*, 649.
Tasmania, Queensland.

Cort. roseum, *Pers. Fr. Hym. Eur.*, 650.
Tasmania.

Cort. sulfureum, *Fr. Hym. Eur.*, 650.
Tasmania.

Cort. cretaceum, *Fr. Ep.* 566.
Tasmania.

Cort. luteo-cinctum, *Berk. Linn. Journ.*, XVI., 168.
Victoria.

Cort. Archeri, *Berk. Fl. Tasm.* II., 260.
Tasmania.

Cort. olivaceum, *Fr. Hym. Eur.*, 660.
Queensland.

Cort. nudum, *Fr. Hym. Eur.*, 655.
Queensland.

Cort. radicale, *Berk. Hook. Journ.*, 1845, 59.
W. Australia.

Cort. incarnatum, *Fr. Hym. Eur.*, 654.
W. Australia, Queensland.

Cort. comedens, *Fr. Hym. Eur.*, 656.
W. Australia.

Cort. miniatum, *Cke. Grevillea* IX. p. 2.
N. S. Wales, Queensland.

Cort. murinum, *B. & Br. Linn. Journ.* XIV., 70.
Victoria.

Cort. anthochroum, *Fr. Hym. Eur.*, 661.

Cort. ochroleucum, *Fr. Epic.*, 557.
Tasmania.

Gen. 11. **HYPOCHNUS**, *Fr.*

Hypoch. rubro-cinctus, *Ehr. Hor. Phys.*, 85.
Queensland.

Gen. 12. **CYPHELLA**, *Fr.*

Cyphella muscigena, *Fr. Hym. Eur.*, 663.
Victoria, Tasmania.

Cyphella Curreyi, *B. & Br. Ann. Nat. Hist.*, No. 935.
Victoria.

Cyphella capula, *Fr. Hym. Eur.*, 664.
Tasmania.

Gen. 13. **SOLENIA**, *Hoffm.*

Solenia ochracea, *Fr. Hym. Eur.*, 596.
Tasmania.

ORD. V. **CLAVARIEI.**

Gen. 1. **CLAVARIA**, *Linn.*

Clavaria botrytis, *Pers. Fr. Hym. Eur.*, 667.
W. Australia, Tasmania, Victoria, N. S. Wales.

Clavaria flava, *Pers. Fr. Hym. Eur.*, 666.
Victoria, N. S. Wales.

Clavaria abietina, *Schum. Fr. Hym. Eur.*, 671.
Victoria.

Clavaria crispula, *Fr. Hym. Eur.*, 673.
W. Australia.

Clavaria lorithamnus, *Berk. Linn. Journ.*, XIII., 169.
Victoria.

Clavaria rugosa, *Bull. Fr. Hym. Eur.*, 669.
Queensland.

Clavaria inæqualis, *Mull. Fr. Hym. Eur.*, 674.
Tasmania, Victoria, N. S. Wales.

Clavaria argillacea, *Pers. Fr. Hym. Eur.*, 675.
Victoria, N. S. Wales, Queensland.

Clavaria paludicola, *Lib. Ess. Ard.*, No. 522.
S. Australia.

Clavaria setulosa, *Berk. Hook. Journ.*, 1845, 60.
W. Australia.

Clavaria juncea, *Fr. Hym. Eur.*, 667.
Victoria, Tasmania.

Clavaria pyxidata, *Pers. Fr. Hym. Eur.*, 669.
N. S. Wales.

Clavaria formosa, *Pers. Fr. Hym. Eur.*, 670.
Victoria, N. S. Wales, Queensland.

Clavaria aurea, *Schff. Fr. Hym. Eur.*, 670.
N. S. Wales.

Clavaria stricta, *Pers. Fr. Hym. Eur.*, 673.
Queensland.

Clavaria cristata, *Pers. Fr. Hym. Eur.*, 668.
Tasmania.

Clavaria lutea, *Vent., t. 41, f. 4.*
Tasmania.

Clavaria Archeri, *Berk. Fl. Tasm.* II., 261, t. 183, f. 3.
Tasmania.

Clavaria rhizomorpha, *Berk. Fl. Tasm.* II., 261, t. 183, f. 4.
Tasmania.

Clavaria plebeja, *Fr. Pl. Preiss.*, 137.
W. Australia.

Clavaria laetissima, *Pers. Linn. Journ.* XVIII., 386.
S. Queensland.

Clavaria Kunzei, *Fr. Hym. Eur.*, 669.
Trinity Bay, Mount Dryander, Daintree River.

Clavaria muscoides, *Fr. Hym. Eur.*, 667.
Paramatta.

Clavaria fastigiata, *Linn. Fr. Hym. Eur.*, 667.
N. S. Wales.

Clavaria coralloides, *Linn. Fr. Hym. Eur.*, 668.
Victoria.

Gen. 2. **CALOCERA**, *Fr.*

Calocera guepiniioides, *Berk. Hook. Journ.*, 1845, 61.
W. Australia, S. Australia, Tasmania.

Calocera glossoides, *Fr. Hym. Eur.*, 681.
Victoria.

Calocera cornea, *Fr. Hym. Eur.* 680.
Victoria.

Calocera stricta, *Fr. Hym. Eur.*, 680.
Gipps Land.

ORD. VI. **TREMELLINI.**

Gen. 1. **TREMELLA**, *Dill.*

Tremella lutescens, *Fr. Hym. Eur.*, 690.
S. Australia, Victoria, Tasmania, N. S. Wales.

Tremella mesenterica, *Retz. Fr. Hym. Eur.*, 690.
W. Australia, Victoria, Queensland, S. Australia.

Tremella frondosa, *Fr. Hym. Eur.*, 690.
Tasmania.

Tremella foliacea, *Pers. Fr. Hym. Eur.*, 690.
W. Australia, Tasmania.

Tremella albida, *Huds. Fr. Hym. Eur.*, 691.
Tasmania, N. S. Wales.

Tremella olens, *Berk. Fl. Tasm.* II., 262, t. 183, f. 5.
Tasmania.

Tremella viscosa, *Berk. Fr. Hym. Eur.*, 691.
Tasmania.

Gen. 2. **EXIDIA**, *Fries.*

Exidia glandulosa, *Fr. Hym. Eur.*, 694.
W. Australia, Tasmania.

Gen. 3. **HIRNEOLA**, *Fr.*

Hirneola polytricha, *Fr. Fung. Nat.*, 27.
S. Australia, N. W. Wales, Queensland, Chatham Island, Lord
Howe's Island, Tropical Australia.

Hirneola hispidula, *Berk. Ann. Nat. Hist.* III., 393.
Victoria.

Hirneola auricula-Judææ, *Fr. Hym. Eur.*, 695.

Victoria, Tasmania, N. S. Wales.

Hirneola vitellina, *Fr. Fungi Nat.*, 27.

Tasmania.

Hirneola rufa, *Fr. Fungi Nat.*, 27.

Queensland.

Hirneola Lesueurii, *Mont. (Auricularia Lesueurii, Bory.)*.

Queensland (= *H. auricula Judææ*).

Hirneola fusco-succinea, *Mont. Syll.*, 182.

S. W. Australia, Clarence River.

Gen. 4. **GUEPINIA**, *Fries*.

Guepinia spathularia, *Fr. Elen. II.*, 32.

N. S. Wales, Queensland.

Guepinia pezizæformis, *Berk. Hook. Journ.*, 1845, 60.

W. Australia, Tasmania, Queensland.

Gen. 5. **DACRYMYCES**, *Nees*.

Dacrymyces rubro-fuscus, *Berk. Hook. Journ.*, 1845, 61.

W. Australia.

Dacrymyces deliquescentis, *Duby. Fr. Hym. Eur.*, 698.

Tasmania.

Dacrymyces miltinus, *Berk. Fl. Tasm. II.*, 363, t. 183, f. 7.

Tasmania.

Dacrymyces sclerotoides, *Berk. Fl. Tasm. II.*, 263, t. 183, f. 8.

Tasmania.

Dacrymyces seriatus, *Berk. Fl. Tasm. II.*, 263.

Tasmania.

Gen. 6. **SEBACINA**, *Tul.*

Sebacina incrustans, *Tul. Linn. Journ. XIII.*, 37.

Tasmania.

SACCARDO'S SYLLOGE FUNGORUM.*

The first volume is just published of this work, which promises to be a most valuable and indispensable one for the Mycologist. The want of some synopsis of all described species has long been felt, and at last Professor Saccardo has undertaken the Herculean task. This volume consists of 766 pages, and includes the descriptions, in Latin, of 2,849 species of Pyrenomycetes, which are estimated to be about half of the entire number. The second volume is promised during next year. As far as we have yet been enabled to test it, the compilation appears to have been carefully and conscientiously performed. We are glad to see that incomplete diagnoses, and doubtful species also find a place in appendices, so that a degree of completeness is attained which would not have been consistent with their exclusion. We are also gratified to find that the reduction of species has not been indulged in so much as

* *Sylloge Fungorum, omnium hucusque cognitorum*. P. A. Saccardo, "Pyrenomycetes," vol. i., (Padua).

we had feared might be the case. We do not suppose that Professor Saccardo has equal faith in all the species that he has introduced, but it is well that he has not excluded all those which he held in doubt, but left this to the judgment of those who might use his volumes. The great desideratum was to bring all the scattered species together into one work for ready reference, this having been done, we do not feel justified in criticising too rigidly the classification adopted, although it is more artificial than we should have liked.

The Perisporiaceæ, and the first part of the Sphæriaceæ, are included in the volume before us, and to this we shall hereafter return to offer some observations on the details, which time and space does not permit us to enter upon now.

The "getting up" leaves nothing to be desired, as the type is clear and legible, and the descriptions are numbered on one side consecutively in each genus, and on the other side consecutively through the work, so that reference and quotation is rendered easy. It is to be hoped that an exhaustive Index will accompany the next volume, as the absence of such an Index is the greatest, and almost only practical deficiency in the first volume. We heartily wish the learned Professor health, patience, and perseverance to bring his labours in due time to a close.

M. C. COOKE.

THE PERISPORIACEÆ OF SACCARDO'S SYLLOGE FUNGORUM.

It is worthy of note that the artificial arrangement, according to the spores, is not adopted by Saccardo in the *Perisporiaceæ*, or, at least, in a very subsidiary manner. This seems to indicate a manifest admission of the defect of the system, or that the originator had no faith in his own doctrine. This proposed system has been vauntingly termed a "carpological arrangement," but this is evidently a false application of terms, since it is only "spermological," which is a very different thing from "carpological." If it had been carpological it would have taken into account the entire fructification, and not the seeds, ovules, or spores alone. It cannot be contested that a system, such as that adopted for the Sphæriaceæ is *artificial*, pure and simple, equivalent to the old Linnean system of counting the stamens. Hence, it is a reversion from the natural arrangement proposed by Fries, and is analogous to going back to the Linnean system. There can be but one opinion now a days that the Natural system is an advance upon the Artificial—as applied to the Phanerogamia. It must be proved that the natural system cannot be applied to Cryptogamia or, if not, we are fully entitled to protest against going backwards in classification. Of course it will be expected that a new system will obtain adherents, because love of novelty will ensure that, but, to suppose that it will be *permanent*, will argue all lack of faith in the progress of the human mind. Inasmuch as

children and uncultured or deficient intellects prefer counting stamens to any more elaborate method for the determination of flowering plants, so will they accept the counting of septa as the perfection of simplicity.

As already intimated, the *Perisporiaceæ* are not absolutely spermologically classified, and therefore, generally, we take no exception to the first 87 pages of Professor Saccardo's "Sylloge." There are, nevertheless, a few minute details to which we will advert for the purpose of revision. In the *Erysiphei*, the arrangement is that of Leveille, with one or two additional genera, which in two instances are not desirable. *Erysiphella*, which only professes to differ from *Erysiphe* in the absence of definite appendages, whereas this is only a fanciful difference, since in many of the species of *Erysiphe* the interwoven threads of the perithecia defy distinction into mycelium and appendages. There is no real difference in this respect between so-called *Erysiphella* and some species called *Erysiphe*. We should be glad to know how the coloured appendages of *Erysiphe lamprocarpa* are to be distinguished from the mycelioid filaments of the perithecia. Leveille himself says "il faut de grandes precautions pour separer les appendicules." The other genus to which we allude is *Pleocharta*. The typical species is *Uncinula polychæta*, Berk. and Curt. The difference indicated between this genus and *Uncinula* is that the appendages are straight in the former, and curved at the tips in the latter, with a slight variation in the form of the asci. We are prepared to admit that the diagnosis of the genus *Pleochæta* presents a distinct difference, and that a species with straight appendages is not in its place if included in *Uncinula*, where the tips, in all the species are curved. But *Uncinula polychæta*, Berk. & Curt., is a true *Uncinula*, with numerous appendages, curled at the tips, just as in *U. adunca*, except that they are thickened upwards, so as to be clavate. The specimens in the Berkeley Herbarium are accompanied by a drawing, exhibiting these features which have been confirmed by examination. The *Uncinula polychæta*, Berk. & Curt., is a true *Uncinula*, and therefore it was an error to adopt it as the type of a genus with straight appendages. The description of *Erysiphe polychæta*, B. & C. (No. 990) is quite different, and so are the specimens. The perithecia are much larger, and are seated upon dense orbicular spots of matted mycelium. The appendages are far more numerous than in *Uncinula polychæta*, and hence there is no reason to suppose that the *Erysiphe* is a condition of the *Uncinula*. Therefore the cardinal error has been the assumption that the two species are identical, which has introduced an element of confusion. *Uncinula polychæta*, B. & C. will have to remain as a separate species, and if there is any good basis for *Pleochæta*, as a genus, then the *Uncinula* must be expunged from its synonyms.

Whilst on the subject of genera, we cannot see how in a natural arrangement, *Sporormia* could possibly be far removed from *Perisporium*, but we can find no mention of it in *Perisporiaceæ*, after Saccardo.

Further notes will be made in the order of species—

Page 11. *Microsphæra semitonsa*, B. & C., should have been *Microsphæra semitosta*, B. & C.

Page 19. *Erysiphe Martii*, Lev., occurs on *Populus ciliata* at Simla, in N.W. India, or at least a form which does not appear to be specifically distinct.

Page 21. *Erysiphe chelones*, Schwz.

Erysiphe phlogis, Schwz.

Neither of these can be separated from *E. lamprocarpa*.

Page 37. *Ascotricha* is so closely related to *Chaetomium* that we cannot see grounds for their separation, except the exigencies of an artificial system.

Page 40. The large genus *Asterina* should properly be confined to species with flattened or depressed perithecia; hence some of the species now included will have to be transferred to *Dimerosporium*, such for instance as No. 35, *Asterina conglobata*, B. & C.; No. 50, *Asterina congregata*, B. & C.; *Asterina myriadea*, Cke. (appendix, p. 761); and most probably *Asterina melioloides*, B. & C. (No. 34), hereafter alluded to.

Page 45. *Asterina bullata*, B. & C. (No. 192), is repeated at page 51 (No. 230).

Page 46. *Asterina melioloides*, B. & C. (No. 195), is the same species as was described under *Meliola Baccharidis*, B. & C. (No. 238). By some error the same thing was twice described under different names, but only one species was intended.

Asterina exasperans, B. & C. (*Phacidium exasperans*, Schwz.), on leaves of *Kalmia*. This species is omitted. The perithecia are flattened, attached by a radiating brown mycelium, but authentic specimens are so old that the asci and sporidia appear to be diffused.

Page 50. *Asterina punctiformis*, Lev. In our specimen from Leveille—"Asci clavate, sporidia continuous hyaline, minute."

Page 51. *Asterina Azarræ*, Lev. Asci ovate, sporidia elliptic, continuous, most probably becoming septate, 0.18×0.08 mm.

Page 53. *Dimerosporium MacOwanianum*, Sacc. (No. 210), a repetition of *Asterina MacOwaniana*, K. & C. (No. 169), and a good *Asterina*.

Dimerosporium mangiferum, Sacc. (236), is repeated at p. 77, as *Capnodium mangiferum*, C. & B. (No. 340).

Dimerosporium molle (B. & Br.), Sacc. (No. 237), has the appendages of a *Meliola*.

Page 61. *Meliola capnodioides*, Thum. (No. 278), is *Meliola amphitricha*, Fr.; inaccurately described according to authentic specimens.

Meliola nidulans (Schw.) Cke., is omitted. This is the *Sphæria nidulans* of Schweinitz, but a most distinct and decided *Meliola*. Asci pyriform, 2-4 spored, sporidia 0.5×0.18 mm., brown, quadri-septate, constricted, rounded at the ends.

Meliola bidentata, Cke. in *Rac. Fungi Amer.* (No. 128). Perithecia globose ($\cdot 15$ mm.), appendages few, erect, bidentate at the tips. Asci saccate, sporidia 0.45×0.18 mm., slightly constricted,

rounded at the ends, brown; usually two in each ascus. On leaves of *Bignonia*. Florida.

Page 63. *Meliola glabra*, B. & C.

There are four specimens in the Berkeley Herbarium, of which three are on *Rubiaceæ*, and one, apparently, on palm; the latter is probably *M. palmarum*, Kze., and the former the true *M. glabra*. The name is, however, misleading, since the perithecia have each cell prolonged into a conical wart, so that by their verrucose appearance these may be readily distinguished from the perithecia of any other described species.

Page 69. *Meliola quinquiespora*, Thum. (No. 309).

We doubt the existence of any species corresponding to this description.

Meliola abietis, Sacc. (*Apiosporium abietis*, Cke.), 308. This is certainly not a *Meliola*, with which it has nothing in common. It is a victim to an artificial system. Although in all other respects it agrees with *Apiosporium*, it has not the requisite septum.

Page 70. *Meliola triseptata*, B. & Br. (No. 313). Further examination of authentic specimens has convinced me that the opinion furnished to Professor Saccardo was inaccurate, and that the sporidia are not as in *M. amphitricha*, but triseptate, $\cdot 035 \times \cdot 012$ mm., constricted, brown, rounded at the ends.

Page 71. *Meliola seminata*, B. & C. (No. 317). To this description should be added "Asci saccate, sporidia quadriseptate, brown."

To these may be added—

***Meliola octospora*, Cooke.**

Spots orbicular, rather small, velvety, perithecia of medium size, appendages erect, twice or three times dichotomous above (as in *M. mollis*, B. & C.). Asci large, saccate, usually with 8 spores, sporidia triseptate, strongly constricted, brown. $\cdot 045 \times \cdot 018$ mm. On leaves. Mauritius.

***Asterina oleina*, Cooke in Rav. Fungi Amer. (No. 757).** Scattered, punctiform; perithecia flattened, discoid, with a radiating brown mycelium at the margin, minute, asci clavate, sporidia hyaline, small, uniseptate (immature?). Pycnidia similar, but smaller, stylospores minute, oval, hyaline, $\cdot 005$ mm. long.

On leaves of *Olea Americana*. Georgia, U.S.

The foregoing suggestions are not made in any captious spirit, since the majority are the result of examinations of authentic specimens, to which Saccardo had no access. They are offered with the desire that they may be of some service as "emendata."

M. C. COOKE.

BRITISH FRESH-WATER ALGÆ.

The subscription list to this work has been some time closed, and nearly all the copies of the parts already published are disposed of, with the exception of a limited number retained for the complete volume. This announcement is made to prevent correspondence, as we receive numerous applications. Unfortunately

we had no data on which to assume the probable demand, and hence a smaller number were printed than desirable, so that there is every probability that the parts will soon be out of print. We have no inclination to reprint the letter press, or reproduce the plates, so that anyone desiring to secure a copy should not delay, or they may be disappointed.

M. C. COOKE.

FUNGI OF SOCOTRA.

***Stereum retirugum*, Cooke.**

Coriaceo-membranaceum, murinum; pileo effuso, e cupulari explanato, marginato; ambitu pallide fimbriato; hymenio subvelutino, reticulato-venoso, murinaceo.

Ad ramos. Socotra (*Balfour*).

***Trametes Socotrana*, Cooke.**

Pileo sessili, semi-orbiculari, tenui, coriaceo, zonato-sulcato, velutino, albo; contextu concolore; poris magnis, dentatis, demum confluentibus, umbrinis.

Ad truncos. Socotra (*Balfour*).

Proceedings Royal Society, Edinburgh, vol. xi. 1882.

THREE NEW INDIAN FUNGI.

BY THE REV. M. J. BERKELEY, F.R.S.

***Hygrophorus Hobsoni*, B.**

Pileo conico eximie umbonato glabro pallido; velo conspicuo appendiculato; stipite sursum incrassato; lamellis angustis pallidis ascendentibus.

Pileus about 1 inch in diameter, $1\frac{3}{4}$ high; stem $2\frac{1}{2}$ inches high, 2 lines thick above.

Communicated by General Hobson, who gathered the specimen in Central India.

***Dictyophora nana*, B.**

Gregaria glandiformis, capite conico expanso; reticulo ad basin stipitis brevis extenso; volva fusca.

Andaman Isles, Lieut.-Col. E. S. Berkeley. Differing from all published species in its dwarf gregarious habit.

***Tilmadoche cavipes*, B.**

Mycelio reticulato candido; peridiis junioribus carneis, senioribus lateritio-effractis pulveraceis globosis, stipitibus candidis basi incrassatis gossypiniis cavis; sporis atropurpureis globosis lævibus; capillitio parco flavo.

On leaves of different species of *Phalænopsis*. Andaman Isles, Lieut.-Col. E. S. Berkeley, 1882.

The filmy reticulate mycelium at length disappears, and the peridia are scattered, looking at first sight from their white stems

like *Diachæa*. The species is altogether distinct from *T. lateritia*, Lev. The dust of the peridia consists of irregular fragments of a bright orange-red.

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY
AND ITS LITERATURE.

A MONOGRAPH OF THE BRITISH HYPOMYCES.

BY CHARLES B. FLOWRIGHT.

With Illustrations of all Species, by Dr. M. C. COOKE, M.A., A.L.S.

(Continued from p. 8.)

3. *Hypomyces lateritius*, Tul. *Conidia* minute, spherical, colourless, $\cdot 0035$ to $\cdot 007$ mm. in diameter; borne upon awl-shaped filaments, produced by the thick web-like mycelium.

Perithecia minute, ovato-globose, nestling in the white abundant mycelium; apex smooth and slightly papillate, emergent.

Asci cylindrical, scarcely attenuated below; $\cdot 2$ to $\cdot 25$ mm. long by $\cdot 006$ to $\cdot 007$ mm. wide.

Sporidia eight; uniseriate, uniseptate, acuminate, lanceolate, hyaline; $\cdot 015$ to $\cdot 02$ mm. long by $\cdot 0035$ to $\cdot 0045$ mm. wide.

Hypomyces lateritius,	Tulasne.	Sel. Fung. Carp. III., p. 62, and
		II., p. 273, t. 30, f. 5.
"	"	Ann. Sc. Nat., Ser. IV. 1860, p.
		11.
"	"	Fuckel Symb. Mycol., p. 182.
"	"	Karsten Myc. Fenn. II., p. 211.
"	"	Cooke Handbk., p. 779.
"	"	Saccardo. Mich. p. 285.
"	"	Plow. Exs, I. No. 5.
"	"	Stevenson Myc. Scot., p. 359.

Merulius helvelloides. Sow., t. 402.

Hypolyssus ventricosus. Pers. Myc. Eur. II., p. 7.

Agaric délicieux, var. dénaturée. Secret. Myc. Helv. I., p. 567.

Lapacendro infarinato. Venturi Stud. Myc., p. 40, t. 13, f. 122
123.

Sphaeria lateritia. Fries Sys. Myc. II., p. 338.

" " Fries Elench. II., p. 66.

" " Moug. and Nest. fasc. XIV., No. 1334.

" " Currey Linn. Trans. (1858), p. 267, t. 46, f.
47.

" " Kunze. Myc. Heft. II., p. 42.

" " Berk. Eng. Fl. v., pt. II., p. 238.

- Hypocrea lateritia. Fries Sum. Veg. Sc., p. 383.
 " " Mazer. Pl. Cryp. Gall. xvi., 776.
 " " Berk. Outlines, p. 383.

On the hymenium of *Lactarius deliciosus*. Whitfield and Merryhill Common, near Hereford, 1874; Coed Coch, Oct., 1880.

This is quite distinct from *Hypomyces torquosus*, with which it seems to be confounded by some Continental fungologists. It is thicker, more fleshy, and, especially in the earlier stages, frosted over with white meal.

- PLATE 148 A. a. *Lactarius deliciosus* with its *Hypomyces*. Nat. size.
 b. *Perithecia* enlarged.
 c. *Perithecium* $\times 140$.
 d. *Asci* and *sporidia* $\times 400$.
 e. *Sporidia* $\times 800$.

4. *Hypomyces torquosus*, Tul. *Perithecia* small, sphaerical, depressed, honey-coloured, papillate, papilla darker; .24 mm. in diameter; produced amongst the floccose subiculum, which varies in amount and colour.

Asci elongate, cylindrical; .112 mm. long by .006 to .007 mm. wide.

Sporidia eight, uniseriate, uniseptate, lanceolate, acuminate, very pale yellow; .018 to .02 mm. long, by .004 to .0045 mm. wide.

- Hypomyces torquosus*. Tul. Sci. Fung. Carp. iii., p. 40.
 " " Cooke Hdbk., p. 779.
 " " Plow. Sph. Brit. ii., No. 4.
Nectria torquosa. Mont. Syll., p. 225, No. 788.
Hypocrea floccosa. Fries Sum. Veg. Sc., p. 564.
 " " Berk. and Br. Ann. N. H., No. 593.
 " " Berk. Outl., p. 383.

On the hymenium of *Lactarius torquosus*. Kings Cliffe, M. J. B.; Dinmore Hill, Oct., 1874, 1878, C. B. P.

At first forming a thin white floccose web upon the gills of the *Lactarius*, which gradually becomes pale yellow, then honey-coloured, and eventually, when the specimen dries, assuming a chocolate-brown hue.

- PLATE 148 B. a. *Lactarius torquosus* with its *Hypomyces*. Nat. size.
 b. *Perithecia* $\times 20$.
 c. *Perithecium* $\times 140$.
 e. *Asci* and *sporidia* $\times 400$.
 f. Free *sporidia* $\times 800$.

5. *Hypomyces rosellus*, Tul. *Conidia*: Flocci aggregate, branched, white, branchlets numerous, 3-6, verticillate, bearing terminal conidia, which are hyaline, cylindrico-oblong, obtuse; 2 or more, usually 3, septate; .025 to .035 mm. long by .01 to .013 mm. wide.

Perithecia gregarious, emerging from a thin subiculum of an open texture, which is at first white, then rose-coloured; sphaeroid-

ovoid, with an obtuse or acute papilla; deep rose-red, variable in size.

Asci narrow, linear; .15 mm. long by .0065 mm. wide.

Sporidia eight; uniseriate, narrowly lanceolate; apiculate at both ends, straight or curved, nucleate or spuriously 1-3 septate, often subunequilateral, hyaline; .022 to .037 mm. long by .005 to .007 mm. wide.

- Hypomyces rosellus*. Tulasne Sel. Fung. Carp. II., p. 273, t. 30, f. 6-9; III., p. 45, t. 5 and t. 6, f. 1-18.
 " " Ann. Sc. Nat., 1860, p. 12.
 " " Karsten Myc. Fenn. II., p. 208.
 " " Saccardo Mich. I., p. 285.
 " " Stevenson Myc. Scot., p. 359.
 " " Cooke Handbk., p. 778, in part.
 " " Plow. Sph. Brit. III., No. 4.

Conidia :

- Trichothecium agaricinum*. Bonord, t. 5, f. 114.
 " *candidum*. Bonord, t. 8, f. 167.
Dactylium dendroides. Fries Sys. Myc. II., p. 441.
 " " Fries Sum. Veg. Sc., p. 491.
 " " Berk. Eng. Flor. v., pt. 2, p. 345.
 " " Berk. Outlines, p. 351.
 " " Cooke Hdbk., p. 778.
 " " Cooke Quek. Journ., 1870, t. 4.

Ascophore :

- Sphaeria rosea*. Pers. Syn., p. 18.
 " " Fries Sys. Myc. II., p. 338.
Sphaeria rosella. Alb. & Schw., p. 38, t. 7, f. 3.
 " " Fries Sys. Myc. III., p. 441.
 " " Nees., p. 318, t. 44, f. 362.
 " " Grev., Crypt. Fl. t. 138.
 " " Currey Linn. Trans. XXII., p. 314, t. 57, f. 3.
Nectria Albertini. Berk. & Broome Ann. N. H. No., 971, t. 17, f. 24a.
 " " Cooke Hdbk., p. 784.
Nectria rosella. Fries Sum. Veg. Sc., p. 388.
 " " Berk. Outlines, p. 393.
Hypomyces roseus. Fuckel Sym. Myc., p. 182.
 " " Saccardo Mich. I., p. 285.

Upon various decaying fungi, *Stereum hirsutum* most frequently, and upon the ground near where fungi have decayed.

There are two varieties of this species, one with larger, pointed perithecia, as figured by Greville and by Albertini and Schweinitz; the other with smaller and more obtuse perithecia. The sporidia vary a good deal in size, as does the colour of the subiculum, which is sometimes nearly absent. Sometimes it is almost white, but mostly rose-coloured, with a whitish circumference. Fuckel's *H. roseus* does not seem to differ from the type species except in the

size of the sporidia. This species is totally distinct from the species pointed out by Messrs. Berkeley and Broome in the "Annals of Natural History," No. 971* and described in this monograph as *Hypomyces Berkleyanus*.

- PLATE 149 . a. Fungus nat. size.
 b. Perithecia $\times 14$.
 c. Perithecium $\times 120$.
 d. Conidia $\times 400$.
 e. Asci and sporidia $\times 400$.
 f. Sporidia $\times 800$.

6. *Hypomyces aurantius*, Tul. *Conidia* : Mycelium creeping, branched, septate, white (becoming orange), sending up erect branched, verticillate, conidiiferous threads, which bear upon their apices ovate or obovate, hyaline, unequally uniseptate, slightly constricted conidia $\cdot 016$ to $\cdot 018$ mm. long by $\cdot 008$ – $\cdot 01$ mm. wide

Perithecia springing from a more or less abundant effused, floccose, ochraceous subiculum, which is often white circumferentially, crowded, subconfluent, spherical, with a conoid-attenuate apex, golden yellow or orange; $\cdot 3$ mm. in diameter.

Asci cylindrical; $\cdot 11$ to $\cdot 14$ mm. long by $\cdot 006$ mm. wide.

Sporidia eight; uniseriate, linear lanceolate, acute, often apiculate at either end; uniseptate or bipartite; hyaline, curved; $\cdot 015$ to $\cdot 024$ mm. long by $\cdot 004$ to $\cdot 006$ mm. wide.

Hypomyces aurantius. Tulasne Sel. Fung. Carp. III., p. 43.

" " Fuckel Sym. Myc., p. 183.

" " Cooke Hdbk., p. 777.

" " Saccardo Mich. I., p. 285.

" " Stevenson Myc. Scot., p. 359.

" " Plow. Sph. Brit. I., No. 4.

Sphaeria aurantia. Fries Sys. Myc. II., p. 440.

" " Pers. Syn., p. 68.

" " Pers. Icones et Des., t. 11, f. 4.

" " Nees., f. 362.

" " Alb. & Schw., p. 35.

" " Schw. Fung. Car. Sup., No. 170.

" " Currey Linn. Trans., t. 57, f. 6.

" " Berk. Eng. Flor. v., pt. 2, p. 259.

Sphaeria aurantiacea. Gray Nat. Arr. I., p. 526.

Sphaeria aurea. Grev., Crypt. Fl. t. 47.

Nectria aurantia. Fries Sum. Veg. Sc., p. 388.

" " Berk. Outlines, p. 393.

On various *Polyporei* and the tougher *Agaricini*, *Polyporus squamosus*, *versicolor*, *adusta*, &c.; also on *Panus torulosus*. Reffley Wood, Kings Lynn, Nov., 1879.

This species varies very much in the amount and colour of the subiculum. Sometimes this is nearly absent, it being invisible to the naked eye. The perithecia are then often crowded together in clusters, as Greville's figure (t. 47) represents. At other times the

subiculum spreads widely, producing only here and there a few scattered perithecia. Some of Greville's specimens of *Cryptosphaeria aurantia* (t. 78) are undoubtedly this species.

PLATE 150 . *a.* Conidia on an old Polyporus. Nat. size.
b. Conidia $\times 400$.
c. Hypomyces on Panus torulosus. Nat. size.
d. Perithecia $\times 20$.
e. Perithecium $\times 140$.
f. Asci and sporidia $\times 400$.
g. Sporidia $\times 800$.

7. *Hypomyces ochraceus*, Tul. *Conidia*: Tufts effused, wooly, white; flocci erect, septate, pellucid; branches and branchlets subulate, verticillate, patent; conidia diaphanous, ovate, obovate, or oblong, straight, usually simple, sometimes uniseptate; $\cdot 05$ - $\cdot 06$ mm. long by $\cdot 004$ - $\cdot 006$ mm. wide.

Chlamydospores produced by the deeper and larger flocci in linear series of 2-4; each chlamydospore is globose, $\cdot 02$ - $\cdot 03$ mm. wide, slightly rough, at first white, becoming dirty or vinous-red.

Perithecia crowded, roundish, yellowish, universal, with a short, thick, obtuse exerted mouth, seated upon a subiculum, which is at first white, then straw-coloured, ochraceous, and yellow.

Asci linear, cylindrical; $\cdot 025$ - $\cdot 03$ mm. long by $\cdot 0065$ mm. wide.

Sporidia eight; oblong-lanceolate, uniseptate, constricted, mucronate at each end; $\cdot 035$ mm. long by $\cdot 0065$ mm. wide.

Hypomyces ochraceus. Tul. Sel. Fung. Carp. III., p. 41, t. 6, f. 19-20, t. 7.

Tul. Ann. Sc. Nat., 1860, p. 12.

Cooke Hdbk., p. 777.

Conidia:

Mucor dendroides, Bull. t. 504, f. 9.

Botrytis agaricina Link Obs. p. 15; Sp. Plant. VI, p. 54.

" " Ditmar, Sturm. Fl. t. 51.

" " Grev., Crypt. Fl. t. 126.

" " Pers. Myc. Europ. I., p. 34.

Botrytis dendroides. Pers. Myc. Europ. I., p. 34.

Verticillium agaricinum. Corda Icones II., p. 15, t. x, f. 68.

Chlamydospores:

Blastotrichum puccinoides. Preuss Sturm. xxv., t. 11

Ascophore:

Sphaeria ochracea. Pers. Syn., p. 18.

" " Pers. Mycol. Europ. I., t. 1, f. 1-2.

Cryptosphaeria aurantia. Grev., t. 78.

I have never met with this species, which seems more inclined to affect the fleshy Agaricini. Tulasne records it upon *Russula emetica*, and *adusta*. Ditmar's figure of the conidia is upon a *Russula* as well as Greville's figure of the conidia (t. 126) and of the perithecia (t. 78.) It is only right, however, to state that some of Greville's specimens now extant in the Kew Herbarium

are clearly *H. aurantius*; but *H. aurantius* was never known by me to occur upon a *Russula*. In the Edinburgh Herbarium, there is a specimen upon some *Agaric* which looks very like *H. terminosus*.

- PLATE 150 bis. *a.* Hypomyces. Nat. size.
b. Perithecia $\times 15$.
c. Perithecium $\times 60$.
d. Conidia $\times 400$.
e. Asci and sporidia $\times 400$.
f. Free sporidia $\times 800$.

8. Hypomyces Tulasneanus. *Plow.* Conidia hyaline, oval, smooth, borne singly on the end of branches of the mycelium; $\cdot 007\text{--}\cdot 015$ mm. long by $\cdot 005\text{--}\cdot 006$ mm. wide.

Chlamydospores large, yellow, narrowly oval, with an attenuated apex, attached at the base to the dilated extremity of a hyaline mycelial tube; $\cdot 016\text{--}\cdot 02$ mm. long by $\cdot 01$ mm. wide.

Perithecia small, ovato-globose, with a rather obtuse ostiola, which emerge from a dirty, yellowish green, thin subiculum; $0\cdot 25$ mm. long by $\cdot 02$ wide.

Asci elongate, cylindrical, $\cdot 12\text{--}\cdot 15$ mm. long by $\cdot 01$ mm. wide. *Sporidia* eight, hyaline, lanceolate, usually simple, $\cdot 02\text{--}\cdot 025$ mm. long by $\cdot 008$ mm. wide.

Hypomyces luteo-virens. *Tul.* *Sel. Fung. Carp.* III., p. 57, t. 8, f. 15-16.

Cooke *Hdbk.*, p. 778.

" " *Sphæria luteo-virens.* *Fries Sys. Myc.* II., p. 339, in part.

Hypocrea luteo-virens. *Fr. Sum. Veg. Sc.*, p. 383, in part.

" " *Berk. & Broome Ann. N. H.*, No. 594.

" " *Currey Linn. Trans.* XXII., t. 46, f. 53.

" " On *Boletus*, Laxton, M. J. B. On *Boletus*. *Mattishall. Sep.*, 1880, C. B. P.

This species is quite distinct from *H. luteo-virens* of Fries. It is much less brightly coloured, has very distinct chlamydospores, and affects *Boleti*.

- PLATE 152. 1. *a.* *Boletus* infested with the *Hypomyces*. Nat. size.
b. Perithecium $\times 20$.
c. Perithecia $\times 140$.
d. Chlamydospores $\times 400$.
e. Asci and sporidia $\times 400$.
f. Sporidia $\times 800$.

9. Hypomyces luteo-virens, *Fries.* Conidia oval, hyaline, born on the tips of hyaline, verticillate, trivariately branched tubes. Stroma, a widely effused, thin tomentum, at first bright egg-yellow, becoming greenish, then almost black.

Perithecia minute, crowded, ovoid or spherical with a conical apex. Emergent, pallid, the free portion becoming brown or nearly black; $\cdot 38$ mm. high, $\cdot 3$ mm. wide.

Asci cylindrical, $\cdot 16$ mm. long by $\cdot 007$ to $\cdot 008$ mm. wide.

Sporidia eight, uniseriate, elongato-elliptic, acute, straight, mucronate at either end, greenish or yellowish, hyaline, simple, $\cdot 028$ to $\cdot 03$ mm. long by $\cdot 005$ to $\cdot 006$ mm. wide.

- Hypomyces viridis*. Berk. & Broome. Ann. N. H., No. 1101.*
 " " Karsten. Myc Fenn. II., p. 211.
 " " Saccardo. Mich I., p. 286.
 " " Phillips & Plow. Grev. VIII., p. 104, t. 130,
 f. 1 (a-e).

Sphaeria viridis. Alb. & Schw. Cons., p. 8, t. 6., f. 8.

" *luteo-virens*. Fries Sys. Myc. II., p. 339.

On various agarics, especially *Lactarii*. Ray's Plantation, South Wootton, 1878-9-80, C. B. P.

This is a very marked species, which I have had one opportunity of watching through various stages of its development. It attacks the fungus (usually as *Lactarius*) before it appears above ground. In this early state, the agaric looks as if it had been dipped in the yolk of an egg. So completely were my specimens infected, that it was impossible to identify the host beyond being an agaric. In a short time the yellow colour darkens and becomes a dirty cinereous green, more or less dark in tint. The affected agaric usually increases *pari passu* with the *Hypomyces*, and does not tend to putrefaction to any abnormal degree.

- PLATE 152. 2. a. Portion of *Lactarius* with the *Hypomyces*. Nat. size.
 b. Perithecia enlarged.
 c. Perithecium $\times 140$.
 d. Sterile threads of conidia $\times 400$.
 e. Asci and sporidia $\times 400$.
 f. Sporidia $\times 800$.

10. *Hypomyces terrestris*, Plow. & Boud. *Conidia* parasitic upon agarics, consisting of branched hyaline septate tubes, bearing at their extremities oval or pyriform conidia, which are filled with transparent, granular endochrome; $\cdot 025$ to $\cdot 03$ mm. long by $\cdot 01$ mm. wide.

Stroma at first a mere web of white arachnoid threads, spreading over the ground, which gradually becomes thicker and consolidates into *Corticium*-like patches of from 1 to 2 c.m. in diameter, of a pale flesh colour.

Perithecia subglobose, at first immersed in the stroma, then nearly half free, reddish in colour; $\cdot 3$ mm. in diameter. Ostiole conoid red.

Asci cylindrical; $\cdot 15$ to $\cdot 2$ mm. long by $\cdot 015$ mm. wide.

Sporidia eight, fusiform, acute, sometimes appendiculated, hyaline, uniseriate; $\cdot 03$ to $\cdot 04$ mm. long by $\cdot 008$ to $\cdot 01$ mm. wide.

Hypomyces terrestris. Plow. & Boud. *Grevillea* VIII., p. 105, pl. 130, f. 2.

On the ground, beneath or in close proximity to the place in which the conidiiferous agaric has decayed.

North Wootton, 1874-80. Leziat, 1880.

The conidia, in this county, occur most frequently upon *Lactarius rufus*. During the process of decay thus engendered in the agaric, the stroma of the *Hypomyces* makes its appearance upon the ground beneath it, which in due time produces perithecia and

sporidia. If, however, the conidiiferous agaric be by any accident removed while the development of the *Hypomyces* is in its earlier stages, asceigerous fructification is not produced. M. Boudier has sent me this fungus from Montmorency.

PLATE 153. a. Fungus nat. size.

b. perithecia enlarged.

c. perithecium $\times 100$.

PLATE 153. d. conidia $\times 400$.

e. Asci and sporidia $\times 400$.

f. sporidia $\times 800$.

11. *Hypomyces Broomeianus*, Tul. *Conidia* hyaline, oval; borne on the extremities of branched, septate, hyaline tubes, which form a subiculum around the perithecia; $\cdot 005$ to $\cdot 007$ mm. in length.

Perithecia ovate, acute, clad with a dense short wool, except immediately around the ostiola; $\cdot 25$ to $\cdot 5$ mm. high by $\cdot 18$ mm. wide.

Asci linear, cylindrical; $\cdot 13$ to $\cdot 14$ mm. long by $\cdot 0035$ mm. wide.

Sporidia eight; linear, lanceolate, straight, uniseptate; $\cdot 013$ mm. long by $\cdot 0035$ mm. wide.

Hypomyces Broomeianus. Tulasne Sel. Carp. Fung. III., p. 108.

" " Berk. & Broome Ann. N. H., No. 1175,
t. 5, f. 3.

" " Cooke Hdbk., p. 778.

" " Plow. Sph. Brit. III., No. 5.

" " Saccardo Mich. I., p. 286.

Hypocrea luteo-virens. Berk. & Broome Ann. N. H., No. 1101.*

" " Rabh. Exs., No. 751.

Batheaston, Nov. On *Polyporus annosus*, C. E. B.; Castle Rising, Nov., C. B. P.

This minute species seems to be confined to the above *Polyporus*, over dead and living specimens of which it runs indiscriminately.

PLATE 154. a. Portion of *Polyporus annosus* with its parasite. Nat. size.

b. Perithecia enlarged.

c. Perithecia $\times 140$.

d. Conidia highly magnified.

e. Asci and sporidia $\times 400$.

f. Sporidia $\times 800$.

12. *Hypomyces Berkleyanus*, Plow. & Cooke. *Perithecia* seated upon a delicate rose-coloured or pallid subiculum, globose or ovate, with a minute ostidolum; $\cdot 32$ mm. in diameter.

Asci cylindrical; $\cdot 01$ to $\cdot 012$ mm. long by $\cdot 007$ to $\cdot 008$ mm. wide.

Sporidia eight; oval or oblong, blunt at both ends, hyaline, uniseptate, uniseriate; $\cdot 008$ mm. long by $\cdot 003$ to $\cdot 004$ mm. wide.

Hypomyces rosellus. Cooke Hdbk., p. 778, in part.

Nectria rosella. B. & Br. Ann. Nat. Hist., No. 971, t. 17, f. 24b.

Downton, Herefordshire, Oct., 1878. On dead *Stereum hirsutum*. Sandringham, Nov., 1878. On dead wood, covered by some *Corticium*.

This species is far more uncommon than *H. rosellus*, from which

it is instantly distinguished by its much smaller, obtuse, Nectria-like sporidia.

PLATE 155, FIG. 1. *a.* Hypomyces on old Stereum.

b. Perithecia.

c. Perithecium $\times 100$.

d. Asci and sporidia $\times 400$.

e. Free sporidia $\times 800$.

13. Hypomyces aureo-nitens, Tul. *Conidia* minute, hyaline, oval; $\cdot 003$ to $\cdot 004$ mm. long by $\cdot 002$ mm. wide; in short chains, born terminally upon tassel-like heads.

Perithecia globose, obtuse, shining golden yellow, granular, not distinctly cellular, small; $\cdot 3$ mm. high, $\cdot 25$ mm. wide, nestling amongst the golden subiculum.

Asci linear; $\cdot 07$ mm. long by $\cdot 005$ mm. wide.

Sporidia eight; uniseriate, ovato-oblong, uniseptate, constricted, acute at either end; $\cdot 01$ to $\cdot 013$ mm. long by $\cdot 003$ mm. wide.

Hypomyces aureo-nitens. Tulasne Sel. Carp. Fung. III., p. 64.

Saccardo Mich. I., p. 258.

On *Stereum hirsutum*. Pwllgrychon Wood, North Wales, 11th Oct., 1880.

PLATE 156. *a.* Hypomyces on hymenium of an old Stereum. Nat. size.

b. Tuft of conidia $\times 40$.

c. Conidia $\times 400$.

d. Apex of thread conidia $\times 800$.

e. Perithecia $\times 15$.

f. Perithecium $\times 140$.

g. Asci and sporidia $\times 400$.

h. Free sporidia $\times 800$.

14. Hypomyces violaceus, Tul. *Conidia*: Mycelium very delicate, white, branching divaricately, bearing hyaline, oval, or linear oblong conidia, which are sometimes septate, straight, or curved; 01 to $\cdot 022$ mm. long by $\cdot 005$ to $\cdot 007$ mm. wide.

Chlamydospores broadly ovate, obtuse at both ends, smoky-brown; $\cdot 023$ to $\cdot 029$ mm. long by $\cdot 016$ to $\cdot 022$ mm. wide.

Perithecia globose, very small, with obtuse ostiola, emergent, purplish violet.

Asci narrow, linear; $\cdot 055$ to $\cdot 06$ mm. long by $\cdot 004$ mm. wide.

Sporidia eight; very small, oblong, obtuse at either end, straight or slightly unequal, simple or uniseptate, hyaline; $\cdot 006$ to $\cdot 007$ mm. long by $\cdot 002$ to $\cdot 003$ mm. wide.

Hypomyces violaceus. Tulasne Sel. Carp. Fung. III., p. 60.

” ” Ann. Sc. Nat., Ser. 4, XIII., 1860, p. 14.

” ” Fockel Sym. Myc., p. 183.

” ” Karst. Myc. Fenn. II., p. 211.

” ” Karst. Exs., 270, 379.

” ” Saccardo Mich. I., p. 286.

” ” Phillips & Plow., Grev. VIII., p. 104.

Sphaeria violacea. Schm. in Herb. Kunze.

” ” Fries Sys. Myc. II., p. 441.

On *Æthelium septicum* (*Fuligo varians*) in an old sawpit at Cawdor Castle, N.B., Sept., 1879.

- PLATE 157, FIG. 1. *a.* Hypomyces on *Æthelium*. Nat. size.
b. Perithecia.
c. Perithecium $\times 100$.
e. Asci and sporidia $\times 420$.
f. Free sporidia $\times 800$.
g. Chlamydospores.
h. Conidia.

15. Hypomyces candicans, *Plow.* *Perithecia* globose, gregarious, upon and surrounded by a floccose, white mycelium, woolly except the ostiolum, which is naked, subhyaline; $\cdot 2$ mm. high by about $\cdot 15$ mm. wide.

Asci cylindrical, rarely subclavate; $\cdot 05$ to $\cdot 06$ mm. long by $\cdot 003$ to $\cdot 005$ mm. wide.

Sporidia oblong, oval, blunt at both ends, rarely uniseptate, binucleate, sometimes very highly constricted at the septum, generally uniseptate; $\cdot 008$ mm. long by $\cdot 003$ mm. wide.

On some *Myxogaster*. Leziat, Ang., 1880; Bathford Down, Oct., 1880.

- PLATE 157, FIG. 2. *a.* Hypomyces candicans. Nat. size.
b. Group of Perithecia enlarged.
c. Perithecium $\times 80$.
d. Asci and sporidia $\times 400$.
e. Sporidia $\times 800$.

16. Hypomyces Linkii, *Tul.* *Conidia* ovate, oblong, or cylindrical, simple, rarely bilocular; $\cdot 01$ to $\cdot 02$ mm. long by $\cdot 007$ mk. wide; smooth, colourless, born singly on the ends of the branches of the mycelium.

Chlamydospores spherical, rose-coloured, verrucose, subtransparent; $\cdot 03$ mm. in diameter; born on the swollen end of a floccus.

Perithecia unknown.

- Hypomyces Linkii. Tulasne Sel. Fung. Carp. III., p. 44.
 " " Tulasne Ann. Sc. Nat., 1860, p. 16.
 " " Saccardo Mich. I., p. 284.
 " " Fuckel Symb. Myc., p. 182.
 Mycogone rosea. Link. Obs. I., 16; Berl. Mag. III., 1809, p. 18;
 Sp., p. 29.
 " " Willd. Sp. Plant VI., p. 29.
 " " Chev. Fung. et Byss, t. 15.
 " " Tulasne Act. Heb. Ac. Science, 1855, p. 616.
 Mycogone incarnata. Pers. Myc. Europ. I., p. 26.
 Sepedonium roseum. Fries Sys. Myc. III., p. 438.
 " " Fries Sum. Veg. Sc., p. 497.
 " " Berk. Eng. Fl. V., Pt. II., p. 351.
 " " Berk. & Broome N. H., No. 132.
 " " Berk. Outlines, p. 355.

- Sepedonium roseum. Cooke Hdbk., p. 620.
 " " Stevenson Myc. Scot., p. 286.
 Mycobanche rosea. Wallr. Fl. Cryp. Germ., p. 273.
 Puccinia mycogone. Corda. Icones I., p. 6, III., f. 99.

On *Agaricus rubescens*, Dr. Cooke; on the stem of a decaying *Boletus*, North Wootton, 1880, C. P. B.

Tulasne's specimens occurred on *Ag. rubescens* and *A. rimosus* in the neighbourhood of Paris.

PLATE 155, FIG. 3. *a.* *Agaricus rubescens* attacked with *Hypomyces*
 Linkii. Nat. size.
b. Microconidia $\times 400$.
c. Macroconidia $\times 400$.

17. *Hypomyces cervinus*, Tul. *Conidia* hyaline, ovate or lanceolate-oblong, simple or rarely uniseptate, borne on the ends of the filaments in a densely fasciculate manner, or sometimes sub-solitary; .013-.016 mm. long by .003 to .0035 mm. wide.

Chlamydospores nearly globose, rough, fawn-coloured, borne singly on the ends of the flocci, which are dilated at their extremities.

Perithecia unknown.

- Hypomyces cervinus*. Tulasne Sel. Fung. Carp. III., p. 51.
 " " Tulasne Ann. Sc. Nat., 1860, p. 16.
 " " Fuckel Sys. Myc., p. 182.
 " " Saccardo Mich. I., p. 285.
Mycogone cervina. Ditmar Sturm. I., p. 107, t. 53.
 " " Pers. Mycol. Europ. I., p. 26.
 " " Link. Sp. Plant VI., p. 30.
 " " Berk. Introd., p. 304.
 " " Rabh. Exs., 672.
Racodium mycobanche. Pers. Myc. Europ. I., p. 72.
Sepedonium cervinum. Fries Sys. Myc. III., p. 439.
Mycobanche cervina. Wall. Fl. Germ. II., p. 273.
Puccinia cervina. Corda. Icones III., p. 4, t. 1, f. 12.
Spotrichum fungorum. Corda. Icones III., p. 4, t. 1, f. 12.]

On *Morchella esculenta*, Castle Rising, 1871; on *Peziza acetabulum*, May, 1872, C. P. B.; on *Peziza macropus*, Sufton Court, Hereford, Oct., 1878, M. C. C.

At first appearing as a white floccose spot, which soon develops the fawn-coloured chlamydospores towards the centre in great profusion, so that in a very short time the affected fungus looks as if it had been dusted with snuff.

PLATE 155, FIG. 2. *a.* *Peziza acetabulum* attacked by *Hypomyces cervinus*. Nat. size.
b. Microconidia $\times 400$.
c. Macroconidia $\times 400$.

EXPERIMENTS UPON THE HETERŒCISM OF THE UREDINES.

BY CHARLES B. PLOWRIGHT.

The following thirty-five experiments are a portion of two series of experimental cultures conducted during the years 1881 and 1882 upon the physiology of the *Uredines*. They are published at the request of several of my friends who are interested in the subject, and who considered further evidence upon the phenomena of heterœcism desirable. It may be observed that the species with which these experiments were commenced, and which was the prime cause of their performance at all, was the *Æcidium* upon *Berberis vulgaris*. In the summer of 1881 a number of cultures were made with the spores of this fungus upon wheat; the result obtained was that in twelve out of thirteen of these experiments *Uredo linearis* followed the infection of the plants with the *Æcidium* spores; but in no less than eleven of them did the *Uredo* appear upon the uninfected wheat plants kept as control plants*. The consequence was that my faith in the heterœcismal character of this species was so much shaken that I was hardly able to believe in it at all.

During the spring and summer of the present year (1882), however, a second series of experiments was instituted, which had not been long in existence before overwhelming evidence of the heterœcismal nature of several species was forthcoming. In these cultures various and less common *Uredines* were employed, so that the error of accidental sporadic infection, it is scarcely possible to believe, could have taken place time after time, with species after species. To take, for instance, the *Ræstelæ*. Of all heterœcismal cultures the easiest successfully to conduct are those in which the *Podisomæ* are employed as infecting material; at least such is my experience, although Prof. Farlow has not been so successful with his cultures† in America. On every occasion upon which I have infected hawthorns with *Podisoma juniperi*, and pears with *P. sabinæ*, the corresponding *Ræstelæ* have been produced. Now both these *Ræstelæ* are very uncommon plants near Kings Lynn. With *Gymnosporangium juniperi* upon mountain ash, four out of five cultures were successful, which is the more noteworthy when it is remembered that the *Gymnosporangium* was sent from Forres, in the north of Scotland (some 400 miles away), by my friend the Rev. James Keith, it being a plant that does not grow in this district.

All the cultures of *Puccinia graminis* on barberry were successful, the control plants remaining free from the fungus.

* Plowright, "Grevillea," vol. x., p. 40.

† Farlow, "The Gymnosporangia of the United States," pp. 34, 35.

With *Æcidium berberidis* on wheat the three experiments performed were all entirely successful, the check plant remaining free from the fungus. Both the infected and the control plants in these last-named experiments were raised under bellglasses, and covered by them continuously, except for the few minutes necessary to perform the infection, until the end of the experiment, so that the source of error from accidental atmospheric infection was reduced to a minimum.

The culture of *Peridermium pini* on the common groundsel (*Senecio vulgaris*) has with me been one of the most difficult to perform. After several successive failures, however, I succeeded in two instances in producing the *Coleosporium*.

By the infection of *Poa annua* with the spores of *Æcidium tussilaginis*, the *Puccinia poarum* of Nielsen was in three out of four cultures produced—a *Puccinia* hitherto unknown in Britain.

Perhaps the most interesting of the series, however, was the production of *Æcidium zonale* on *Inula dysenterica* (also a fungus new to the British flora) by infection with *Uromyces junci*. This was successful in every experiment. The actual demonstration of this heterocism had not hitherto, I believe, been made, although Fuckel* had the strongest ground for believing it to exist.

In one of these experiments some fragments of *Juncus obtusiflorus*, with numerous pustules of *Uromyces*, in active germination, on them, were placed upon the upper leaves of a plant of *Inula dysenterica*; in the course of ten or fifteen days these leaves began to show the yellow spots, which were the forerunners of the *Æcidium*. By this time the plant had grown taller, and had developed fresh leaves above those on which the *Juncus* had been placed. The fragments of *Juncus* were then removed from the leaves, on which they had been in the first instance placed, to the healthy, recently expanded leaves above, where in due course the *Æcidium* was developed. It was very interesting to observe how the *Æcidium* could thus be produced in successive crops.

Podisoma sabinæ and *Ræstelia cancellata*.

Exp. 2.—Six pear seedlings had fragments of *Podisoma sabinæ* placed on each on 19th April; on 6th May the spermogonia of *Ræstelia cancellata* appeared on them.

Exp. 6.—Three pear seedlings were infected on the 13th April with *Podisoma sabinæ*; on 24th April yellow spots appeared; on 6th May spermogonia were abundant on all three plants.

Exp. 10.—Four pear seedlings infected with *Podisoma sabinæ* on 14th April at 8 a.m. On 6th May every plant had spermogonia on it.

Exp. 25.—11th May. Some *Podisoma sabinæ*, which had been soaked for 48 hours in water in a watch-glass, was placed on some leaves of a pear tree in Mr. T. Pung's garden. Having some doubt of the efficacy of the material, these leaves were reinfected on

* Fuckel, "Symbol. Mycol.," p. 61.

the 25th May. On 11th June spermogonia appeared on one leaf. There were many pear trees in this garden, but this was the only pear leaf on which the fungus could be found. This leaf was gathered during the last week of September, and exhibited at Hereford. It never got beyond the spermogonial condition.

Podisoma juniperi and *Ræstelia lacerata*.

Exp. 4.—Two thorn seedlings (*Cratægus oxyacantha*) infected on 10th April with *Podisoma juniperi*. On 24th abundance of spermogonia; on 25th May perfect *Ræstelia lacerata* on both these plants.

Exp. 5.—Three similar plants were on 7th April infected with *Podisoma juniperi* very freely. 24th April the leaves were yellow with spermogonia; 25th May perfect *Ræstelia* was produced.

Exp. 15.—Two similar plants infected on 17th April. On 6th May spermogonia noted, and on 3rd June the perfect *Ræstelia* on both plants.

Exp. 16.—Three similar plants infected on 17th April. On 6th May spermogonia noted, and on 3rd June the perfect *Ræstelia* on all these plants.

Exp. 27.—On 11th May the leaves on the lower branch of a hawthorn tree in Mr. T. Pung's garden were infected with *Podisoma juniperi*. On the 21st the spermogonia appeared on five leaves, which in due time developed into the perfect *Ræstelia*. On no other part of this tree, nor on any other thorn, either bush or hedge, in this garden, was any specimen of either the spermogonia or the perfect fungus to be seen.

Gymnosporangium juniperi and *Ræstelia cornuta*.

Exp. 43.—Five small plants of *Sorbus aucuparia* were on the 29th May infected with *Gymnosporangium juniperi*, sent by the Rev. James Keith from Forres; on 25th July spermogonia appeared on three leaves; on 4th September the perfect *Ræstelia cornuta* was observed.

Exp. 44.—Five similar plants were infected on the 29th May. On 21st June yellow spots appeared; on 1st July spermogonia were seen, and on the 4th September the perfect *Ræstelia*.

Exp. 63.—One small mountain ash (*Sorbus aucuparia*) was infected on the 12th June with *Gymnosporangium juniperi*, sent by Rev. J. Keith from Forres. On 16th Aug. spermogonia were noted.

Exp. 73.—A similar plant was on the 18th June infected with the same material. On 1st July spermogonia appeared, and on 30th August the perfect *Ræstelia*. It should be observed that I had never seen this fungus in Norfolk until it was produced by artificial infection with the *Gymnosporangium*.

Puccinia graminis and *Æcidium berberidis*.

Exp. 11.—On 14th April a three-year-old plant of *Berberis vulgaris* was infected with the germinating teleutospores of *Puccinia graminis* (on *Triticum repens*), and covered with a large bellglass. As the supply of infecting material was on this occasion limited,

the process was completed on the following day (the 15th), and on the 17th. The bellglass was not removed until the 24th. On 6th May spermogonia appeared, and on the 24th the perfect *Æcidium* was noted on 20 leaves. A precisely similar barberry kept as a control plant had no *Æcidium* upon, although grown in the same garden, and carefully observed throughout the summer.

Exp. 14.—A similar barberry plant was on the 17th April infected with the same material. On the 6th May spermogonia and on 3rd June perfect *Æcidia* were noted, the control barberry remaining free from the fungus.

Exp. 19.—On 9th May a similar barberry was infected. On 25th spermogonia and on 15th June perfect *Æcidia* were noted. The control barberry remained free from the fungus.

Æcidium berberidis and *Puccinia graminis*.

Exp. 48.—24 wheat seedlings growing in a flower pot, which had been continually covered by a bellglass from the day the wheat was sown, were on 23rd May infected with ripe spores of *Æcidium berberidis*, sent for the purpose by Mrs. Howell, of Drayton Rectory. On the 3rd June sickly yellow spots appeared on some of the plants; on the following day (4th June) true *Uredo linearis* made its appearance. On 8th June the pot was removed from the garden into a room in the house, and the diseased plants removed. By the 30th every plant had the parasite on it. A similar pot of wheat seedlings grown under exactly similar conditions, but not infected with *Æcidium* spores, remained free from *Uredo*.

Exp. 80.—Five wheat plants which had been reared under a bellglass were on the 28th June infected with *Æcidium berberidis* spores from *Exp. 14*; on 17th June *Uredo* appeared on one leaf, and three days later on the others. The five control wheat plants remained healthy.

Exp. 81.—Many wheat seedlings reared under a bellglass were on 28th June infected with *Æcidium berberidis* spores; on 16th August *Uredo* was noted on them. A similar pot of wheat seedlings not infected with the *Æcidia* spores remained healthy.

Puccinia caricis and *Æcidium urticae*.

Exp. 2.—On the 8th April three plants of *Urtica dioica* were planted in a flower pot; around them was laid a quantity of *Carex hirta*, with last year's *Puccinia caricis* on it. The pot was covered by a bellglass, and freely watered. On 2nd May two of the plants were heavily affected with *Æcidium urticae*; on 6th May the nettles were planted out, and the *Carex* straw removed and destroyed. On 9th May all three plants were much distorted, both on their stems and on their leaves, with the *Æcidium*.

Æcidium urticae and *Uredo caricis*.

Exp. 33.—On May 15th a clump of healthy *Carex hirta* grown in a flower pot under a bellglass for three weeks, had two leaves of nettle with *Æcidium* on them from the previous experiment (*Exp.*

9) laid upon it; on 15th June *Uredo caricis* made its appearance, and by 1st July it had affected many of the *Carex* leaves.

Exp. 49.—Three scions of *Carex hirta* from South Wootton were on the 26th May infected with spores of *Æcidium urticae*; on 3rd June sickly spots were noted, which five days later (on 8th) were the site of *Uredo* pustules. On 21st all the plants were affected with the *Uredo*.

Exp. 26 (1881).—Four plants of *Carex hirta* were infected on 21st July with *Æcidium urticae*, and four similar plants kept as checks. On 15th August *Uredo* appeared in two of the infected plants. The check plants remained free from the fungus, as did 33 other individuals of *Carex hirta* growing in the same garden.

Puccinia magnusiana and *Æcidium rumicis*.

Exp. 18.—Two plants of *Rumex hydrolapathum* and two of *P. obtusifolium* were planted in a large flower pot, and surrounded with leaves of *Phragmites communis*, on which the teleutospores of last year's *Puccinia magnusiana*, were abundant. The pot was covered with a bellglass, and freely watered. On 3rd June red spots appeared on the leaves of the *R. hydrolapathum*, which, by the 6th June, developed into perfect *Æcidium rumicis*. No *Æcidia* appeared on the *R. obtusifolium*.

Exp. 32.—Three plants of *Rumex hydrolapathum* were similarly surrounded with reed leaves on 15th May. On 6th June perfect *Æcidium rumicis* was developed on all three plants.

Æcidium rhamni and *Puccinia coronata*.

Exp. 55.—A flower pot of seedling oats were infected on 7th June with *Æcidium rhamni*. On the 10th July there was an appearance like *Uredo*. On 10th August the *Uredo* of *Puccinia coronata* was gathered.

Exp. 76.—A number of oat seedlings were on 23rd June infected with *Æcidium rhamni*. On 12th June *Uredo* of *P. coronata* appeared.

Æcidium tussilaginis and *Puccinia poarum*.

Exp. 84.—Four plants of *Poa annua* were on 29th July infected with *Æcidium tussilaginis*. On 10th July *Uredo* appeared, and on the 18th the perfect *Puccinia*, which had hitherto not been recorded as British.

Exp. 85.—Three plants of *Poa annua* were on the 29th June infected with *Æcidium tussilaginis*. On 10th July the *Uredo* and on the 18th the *Puccinia* appeared.

Exp. 86.—A number of plants of *Poa annua* in a pot were infected with the *Æcidium* on 29th June. On 10th July the *Uredo*, and on the 18th July the *Puccinia* appeared.*

* Note *Poa annua* is a common weed in the garden in which these experiments were performed, as it is in every garden, but on no other plant of this grass could the *Puccinia* be found, although careful search was made, except those upon which the spores of *Æcidium tussilaginis* had been placed.

Uromyces junci and *Æcidium zonale*.

Exp. 40.—Germinating *Uromyces junci* was on the 25th May placed on three plants of *Inula dysenterica*. On 4th June yellow spots appeared on all these plants, which by the 21st developed into perfect *Æcidium zonale*.

Exp. 42.—Germinating *Uromyces junci* was placed on two plants of *Inula dysenterica* on 29th May. On 12th June abundant yellow spots were noticed, which by the 21st had developed into perfect *Æcidium zonale*.

Exp. 64.—Three plants of *Inula dysenterica* were on 8th June infected with *Uromyces junci*; by 30th perfect *Æcidium zonale* was abundantly produced on all three plants. To this experiment three control plants were kept which remained perfectly free from the fungus.

Peridermium pini and *Coleosporium senecionis*.

Exp. 31.—Two plants of *Senecio vulgaris* were on the 13th May infected with *Peridermium pini*. On 2nd June the *Coleosporium* appeared on both plants.

Exp. 54.—Four plants of *Senecio vulgaris* were on 7th June infected with *Peridermium pini*. On 28th the *Coleosporium* appeared. Many plants of *Senecio vulgaris* existed in the garden, but none of them, either at the time these experiments were performed, nor before, nor since, have had any trace of the fungus upon them.

AUSTRALIAN FUNGI.

BY M. C. COOKE.

(Continued from p. 34.)

GASTEROMYCETES. *Fr.*ORD. I. PHALLOIDEI, *Fr.*Gen. 1. PHALLUS, *Linn.*

Phallus merulinus, *Berk. Intell. Obs.*, ix., p. 404.
Queensland.

Phallus tahitensis, *Schlecht Diss.*
N. S. Wales.

Phallus Novæ Hollandiæ, *Corda. Icon.* vi., t. 3, f. 46.
New South Wales.

Phallus multicolor *Berk. & Br. Linn. Trans.*, Ser. 2, ii., 67.
Queensland, N. S. Wales.

Phallus quadricolor, *B. & Br. Linn. Trans* ii., 68, t. 14.
Queensland.

Phallus vitellinus, *Müll.* (description unknown).
Victoria.

Phallus curtus, *Berk.* *Hook. Journ. Bot.*, 1845, 69.

W. Australia.

Phallus calyptratus, *B. & Br.* *Linn. Trans.*, II., 67.

Queensland.

Phallus aurantiacus, *Mont. Ann. Sci. Nat.*, 1841, 277, t. 16, f. 1.

Queensland.

Phallus Watsoni, *Berk.* *Linn. Journ.*, XVIII., p. 367.

Burnett's River.

Gen. 2. **CYNOPHALLUS**, *Fr.*

Cynoph. papuasius, *Kalch. Grev.* IV., p. 74.

Queensland.

Cynoph. Caleyi, *Berk.* (*Phallus libidinosus*, *Cayley.*)

Clarence River, Queensland.

Gen. 3. **CLATHRUS**, *Mich.*

Clathrus crispus, *Turp. Berk. Ann. Nat. Hist.*, IX., 446.

Queensland.

Clathrus pusillus, *Berk. Hook. Journ. Bot.*, 1845.

Queensland, W. Australia.

Clathrus hirudinosus, *Lev. Ann. Sci. Nat.*, III., t. 8.

W. Australia.

Gen. 4. **ILEODICTYON**, *Tul.*

Ileodictyon gracile, *Berk. Hook. Journ. Bot.*, 1845.

W. Australia, Victoria, Tasmania, N. S. Wales.

Ileodictyon cibarium, *Tul. Corda. Icon.*, VI., 26.

Mount Dromedary.

Gen. 5. **LYSURUS**, *Fr.*

Lysurus Archeri, *Berk. Fl. Tasm.*, II., 264, t. 184.

Tasmania.

Lysurus aseröeformis, *Corda. Icon.*, VI., t. 4, f. 3—8.

Tasmania.

Gen. 6. **ANTHURUS**. *Kalch.*

Anthurus Mullerianus, *Kalch. Phall. Nov.*, t. 3, f. 3.

Victoria.

Gen. 7. **ASERÖE**, *Labill.*

Aseröe rubra, *Labill. Voy. Austr.*, 145.

S. Australia, Victoria, N. S. Wales.

Aseröe pentactina, *Endl. Schlecht. Diss.*, 7.

N. S. Wales.

ORD. II. **LYCOPERDACEI**, *Fr.*

Gen. 1. **PODAXON**, *Desv.*

Podaxon pistillaris, *Fr. Syst. Myc.* III., 63.

Victoria, Queensland.

Podaxon carcinomalis, *Fr. Syst. Myc.* III., 62.

Queensland, S. Australia.

Gen. 2. *XYLOPODIUM*, *D.R. & M.*

Xylopodium australe, *Berk. Linn. Journ. XVI.*, 171.
S. Australia, Victoria, N. S. Wales.

Gen. 3. *PHELLORINA*, *Berk.*

Phellorina strobilina, *Kalch. Grevillea IX.*, 4.
Queensland.

Gen. 4. *SECOTIUM*, *Kunze.*

Secotium melanosporum, *Berk. Hook. Journ. Bot.*, 1845, 62.
W. Australia.

Secotium coarctatum, *Berk. Hook. Journ. Bot.*, 1845, 63.
W. Australia.

Secotium erythrocephalum, *Tul. Ann. Sci. Nat.*, 1844, 115.
Tasmania.

Secotium Drummondii, *Berk. in Herb. vide Hook. Journ.*, 1845, p. 63.
W. Australia.

Secotium Gunnii, *Berk. in Herb. Berk.*, No. 4412.
Sulphur springs, Tasmania.

Secotium Czerniavii, *Mont. Flor. Alg.*, 371.

Gen. 5. *MITREMYCES*, *Nees.*

Mitremyces fuscus, *Berk. Ann. Nat. Hist. III.*, p. 325.
Victoria, Tasmania, Lake Muir.

Mitremyces luxidus, *Berk. Hook. Journ. Bot.*, 1845, 65.
W. Australia.

Mitremyces viridis, *Berk. Hook. Journ. Bot.*, 1851, 201.
Victoria.

Gen. 6. *TULOSTOMA*, *Bull.*

Tulostoma mammosum, *Fr. Syst. Myc. III.*, 42.
Rockhampton.

Tulostoma fimbriatum, *Fr. Syst. Myc. III.*, 43.
W. Australia.

Tulostoma leprosum, *Kalch. Grev. IV.*, 72.
Queensland.

Gen. 7. *BATTARREA*. *Pers.*

Battarrea Muelleri, *Kalch. Grevillea X.*, p. 3.
S. Australia.

Battarrea phalloides, *Pers. Syn. Fung.*, 129, t. 3, f. 1.
Between Murchison River and Shark's Bay.

Gen. 8. *MESOPHELLIA*. *Berk.*

Mesophellia arenaria, *Berk. Linn. Trans. XXII.*, 131, t. 25.
Tasmania, Harrietville, W. Australia.

Mesophellia ingratisissima, *Berk. Linn. Journ. XVIII.*, 386.
River Goulburn.

[The proposed substitution of *Inoderma* for *Mesophellia* is inadmissible, as there is already a genus of Algæ bearing the same name.]

Gen. 9. *GEASTER*. *Mich.***Geaster hygrometricus**, *Pers. Syn. Fung.* 135.

Rockhampton, W. Australia.

Geaster lageniformis, *Vitt. Mon. Lycop.*, t. 1, f. 2.

Tweed River.

Geaster fimbriatus, *Fr. Syst. Myc.* III., 16.

S. Australia, Tasmania, Victoria, Queensland.

Geaster Drummondii, *Berk. Hook. Journ. Bot.*, 1845.

W. Australia, Victoria.

Geaster minimus, *Schwz. Syn.*, p. 58, No. 327.

W. Australia, S. Australia, Victoria, N. S. Wales, Queensland.

Geaster striatus, *D.C. Fr. Syst. Myc.* III., 13.

W. Australia, Queensland.

Geaster striatulus, *Kalch. Grevillea IX.*, p. 3.

S. Australia, Queensland.

Geaster saccatus, *Fr. Syst. Myc.* III., 16.

Tasmania, N. S. Wales, Queensland, W. Australia, Richmond River.

Geaster tenuipes, *Berk. Fl. Tasm.* II., 264, t. 183, f. 9.

Tasmania.

Geaster Archeri, *Berk. Fl. Tasm.* II., 264.

Tasmania.

Geaster lignicola, *Berk. Linn. Journ.* XVIII., 386.

Rockhampton.

Geaster Australis, *Berk. Fl. Tasm.* II., 265, t. 183, f. 10.

Tasmania, King George's Sound.

Geaster rufescens, *Pers. Fr. Syst. Myc.* III., 18.

W. Australia, N. S. Wales.

Geaster Guilfoylei, *Mull. in Herb. Berk.*, No. 4564. Apparently the same as **Geaster rufescens**, *Pers.***Geaster dubius**, *Berk. Linn. Journ.*, XVI., 40.

N. S. Wales.

Geaster vittatus, *Kalch. Grevillea IX.*, p. 3.

Australia.

Geaster pusillus, *Fr. Pl. Preiss.*, p. 139.

W. Australia.

Geaster floriformis, *Vitt. Mon. Tub.*, 18.

Queensland.

Gen. 10. *BOVISTA*. *Pers.***Bovista Mulleri**, *Berk. Linn. Journ.* XVI., 171.

Queensland, Darling Range.

Bovista lilacina, *B. & M. Hook. Journ. Bot.*, 1845.

W. Australia, Tasmania, Victoria, N. S. Wales, Queensland.

Bovista brunnea, *Berk. Fl. N. Zeal.* II., 119.

N. S. Wales.

Gen. 11. **LYCOPERDON.** *Tourn.*

Lycoperdon cælatum, *Fr. Syst. Myc.* III., 32.

N. S. Wales, Queensland.

Lycoperdon australe, *Berk. Fl. Tasm.* II., 266.

S. Australia, Victoria, Tasmania, W. Australia, N. S. Wales, Clarence River, Endeavour River.

Lycoperdon glabrescens, *Berk. Fl. Tasm.* II., 265.

Victoria, Tasmania.

Lycoperdon pyriforme, *Schff. Fr. Syst. Myc.* III., 29.

Victoria, Tasmania, N. S. Wales, Clarence River.

Lycoperdon gemmatum, *Fr. Syst. Myc.*, III., 36.

W. Australia, Tasmania, N. S. Wales, Queensland.

Lycoperdon Gunnii, *Berk. Fl. Tasm.* II., 265.

Tasmania.

Lycoperdon pusillum, *Batsch. Cont.* II., 123.

W. Australia, Queensland, King George's Sound, N. S. Wales.

Lycoperdon reticulatum, *Berk. Fl. N. Zeal.* II., 190.

Victoria.

Lycoperdon mundula, *Kalch. Grevillea* IX., p. 3.

Victoria.

Lycoperdon tephrum, *B. & Br. in Herb. Berk.*, No. 4630.

Queensland.

Gen. 12. **MYCENASTRUM.** *Desv.*

Mycenastrum phæotrichum, *Berk. Hook. Journ.* II., 418.

W. Australia, Queensland, Port Denison, N. S. Wales.

Mycenastrum corium, *Berk. Hook. Journ.*, 1845, p. 518.

Queensland.

Gen. 13. **POLYSACCUM.** *Fr.*

Polysaccum marmoratum, *Berk. Linn. Journ.* XVI., 171.

W. Australia, S. Australia, N. S. Wales, S. W. Australia.

Polysaccum pisocarpum, *Fr. Syst. Myc.* III., 54.

W. Australia, Queensland, Moreton Bay.

Polysaccum crassipes, *Fr. Syst. Myc.*, III., 53.

W. Australia.

Polysaccum turgidum, *Fr. Syst. Myc.*, III., 53.

W. Australia.

Polysaccum olivaceum, *Fr. Syst. Myc.* III., 54.

Queensland, King George's Sound, Endeavour River.

Polysaccum australe, *Lev. Ann. Sci. Nat.*, 1848

Queensland.

Polysaccum tuberosum (*Mich.*). *Linnea.* v., 694.

Paramatta.

Polysaccum (?) degenerans, *Fr. Plant Preiss.*, 159.

W. Australia.

Gen. 14. *SCLERODERMA*, *Fr.***Scleroderma geaster**, *Fr. Syst. Myc.* III., 460.

W. Australia, S. Australia, Victoria, Tasmania, N. W. Wales, Queensland, S. W. Australia.

Scleroderma bovista, *Fr. Syst. Myc.* III., 48.

Victoria, N. S. Wales, Queensland, Endeavour River.

Scleroderma vulgare, *Fr. Syst. Myc.* III., 46.

W. Australia, S. Australia, Victoria, N. S. Wales, Queensland, S. W. Australia.

Scleroderma pandanaceum, *Müll. Linn. Journ.* XVI., 171.

Queensland.

Gen. 15. *ARACHNION*, *Schwein.***Arachnion Drummondii**, *Berk. Linn. Journ.* XVIII., 389.

W. Australia.

Gen. 16. *PAUROCOTYLES*. *Berk.***Paurocotyles echinosperma**, *Cke. Grevillea*, VIII., 59.

Victoria.

ORD. III. **NIDULARIACEI**. *Fr.*Gen. 1. *CYATHUS*. *Hall.***Cyathus Lesueurii**, *Tul. Ann. Sci. Nat.*, 1844, 79.

N. S. Wales, Clarence River, Rockhampton.

Cyathus intermedius, *Tul. Ann. Sci. Nat.*, 1844, 72.

Queensland, Daintree River.

Cyathus fimetarius, *DC. Fl. Fr.* v., 104.

Queensland.

Cyathus fimicola, *Berk. Linn. Journ.* XVIII., 387.

Rockhampton.

Cyathus pusio, *Berk. Linn. Journ.* XVIII., 387.

Rockhampton.

Cyathus desertorum, *Müll. Linn. Journ.* XVIII., 387.

Darling River.

Cyathus Colensoi, *Berk. Fl. N. Zeal.* II., 192.

S. Australia, Tasmania, N. S. Wales.

Cyathus vernicosus, *DC. Fl. Fr.* II., 270.

W. Australia, Queensland.

Cyathus Montagnei, *Tul. Ann. Sci. Nat.*, 1844, 70.

W. Australia, Queensland.

Cyathus pezizoides, *Berk. Linn. Journ.* XVIII., 387.

Rockhampton.

Gen. 2. *CRUCIBULUM*. *Tul.***Crucibulum vulgare**, *Tul. Ann. Sci. Nat.*, 1844, 90.

Victoria, Queensland.

Gen. 3. SPHÆROBOLUS. *Tode.*

Sphærobolus stellatus, *Tode. Meckl. I.*, 43.
Tasmania.

ORD. IV. **HYPOGÆI.**

Gen. 1. HYDNANGIUM. *Wallr.*

Hydnangium Australiense, *B. & Br. Linn. Trans. II.*, 68.
Queensland.

Gen. 2. OCTAVIANA. *Vitt.*

Octaviana Archeri, *Berk. Fl. Tasm. II.*, 263.
Tasmania.

Gen. 3. HYMENOGASTER. *Vitt.*

Hymenogaster Moselei, *B. & Br. Linn. Journ. XVI.*, 40.
N. S. Wales.

Hymenogaster Klotschii, *Tul. Fungi Hyp.*, p. 64.
W. Australia.

Gen. 4. GAUTIERIA. *Vitt.*

Gautieria Drummondi, *Berk. in Herb. Berk.*, No. 4446.
W. Australia. (Only a fragment.)

MYXOMYCETES.

ORD. I. **CALCAREÆ**, *Rostf.*

Gen. 1. BADHAMIA. *Berk.*

Badhamia hyalina (*Pers.*). *Rostf. Mon.* 140.
Tasmania.

Badhamia utricularis (*Bull.*), *Rostf. Mon.*
N. S. Wales.

Gen. 2. PHYSARUM. *Pers.*

Physarum cinereum, *Eatsch. Rostf. Mon.*, p. 102.
W. Australia.

Physarum Berkeleyi, *Rostf. Mon.*, p. 105.
W. Australia.

Gen. 3. FULIGO. *Hall.*

Fuligo varians (*Somm.*), *Rostf. Mon.*, 134.
Tasmania, Queensland.

Gen. 4. CRATERIUM. *Trent.*

Craterium vulgare, *Ditm. Rostf. Mon.*, 118.
W. Australia.

Craterium minutum *Leers. Rostf. Mon.*, 120.
Tasmania.

Gen. 5. *LEOCARPUS*. *Link.*

Leocarpus fragilis, *Dicks.* *Rostf. Mon.*, 132.
Tasmania.

Gen. 6. *TILMADOCHÉ*. *Fr.*

Tilmadoche nutans *Pers.* *Rostf. Mon.*, 127.
W. Australia, Tasmania, Queensland.

Tilmadoche mutabilis. *Rostf. Mon.*, 130.
Rockhampton.

Gen. 7. *CHONDRIODERMA*. *Rostf.*

Chondrioderma spumarioides, *Rostf. Mon.*, 174.
Rockhampton.

Chondrioderma difforme (*Pers.*). *Rostf. Mon.*, 177.
Queensland.

Gen. 8. *DIDYMIUM*. *Schrad.*

Didymium farinaceum, *Schr.* *Rostf. Mon.*, 154.
Queensland.

Didymium squamulosum, *A. & S.* *Rostf. Mon.*, 159.
Tasmania.

ORD. II. **AMAUROCHÆTEÆ**, *Rostf.*

Gen. 1. *LAMPRODERMA*. *Rostf.*

Lamproderma echinulata, *Berk.* *Fl. Tasm.* II., 268.
Tasmania.

Gen. 2. *COMATRICHA*. *Pers.*

Comatricha Friesiana, *De. Bary.* *Rostf. Mon.*, 199.
Tasmania.

Gen. 3. *STEMONITIS*. *Gled.*

Stemonitis fusca, *Roth.* *Rostf. Mon.*, 193.
W. Australia, Tasmania, Queensland.

Stemonitis ferruginea, *Ehr.* *Rostf. Mon.*, 196.
Moreton Bay.

ORD. III. **ANEMÆÆ**, *Rostf.*

Gen. 1. *TUBULINA*. *Pers.*

Tubulina cylindrica, *Bull.* *Rostf. Mon.*, 220.
Tasmania.

Tubulina nitidissima, *Berk.* *Linn. Journ.*, XVIII., 387.
Rockhampton.

Gen. 2. *CLATHROPTYCHIUM*. *Rostf.*

Clathroptychium rugulosum (*Wallr.*). *Rostf. Mon.*, 225.
W. Australia.

ORD. IV. **ARCYRIACEÆ.**

Gen. 1. **ARCYRIA.** *Hill.*

Arcyria punicea, *Pers. Rostf. Mon.*, 268.
Queensland.

Arcyria incarnata, *Pers. Rostf. Mon.*, 275.
W. Australia, Queensland.

Arcyria pomiformis, *Roth. Rostf. Mon.*, 271.
Australia.

Arcyria nutans, *Fr. Syst. Myc.*, III., 180.
W. Australia, Queensland.

Arcyria cinerea (*Bull.*). *Rostf. Mon.*, 272.
Queensland.

Arcyria ferruginea, *Sauter. Rostf. Mon.*, 280.
Rockhampton.

Gen. 2. **LYCOGALA.** *Mich.*

Lycogala epidendrum, *Burb. Rostf. Mon.*, 285.
W. Australia.

ORD. V. **TRICHIACEÆ.**

Gen. 1. **PROTOTRICHIA.** *Rostf.*

Prototrichia flagellifer (*Berk.*). *Rostf. Mon. Supp.*, 38.
Tasmania.

Gen. 2. **TRICHIA.** *Hall.*

Trichia chrysosperma, *Bull. Rostf. Mon.*, 255.
Tasmania.

Trichia varia, *Pers. Rostf. Mon.*, 251.
Tasmania.

Trichia contorta (*Ditm.*) *Rostf. Mon.*, 259.
Tasmania.

Gen. 3. **HEMIARCYRIA.** *Rostf.*

Hemiarcyria rubiformis (*Pers.*). *Rostf. Mon.* 261.
Tasmania.

BRAUN'S "CHARACEEN."—Just as we are going to press we have received, through the kindness of Professor Nordstedt, a copy of Braun's "Fragmente einer Monographie der Characeen," edited by Nordstedt, and reprinted from the "Transactions of the Berlin Academy." At the present we can only call attention to it as a valuable contribution to the Geographical Distribution of the *Characeæ*.

SACCARDO'S "SYLLOGE."

The following is Professor Saccardo's defence in reply to our observations in the previous number of *Grevillea* :—

"DEAR COLLEAGUE,—

"A few days ago I saw No. 57 of 'Grevillea,' and thank you very much for the notice of Vol. I. of my 'Sylloge.'

"As regards your criticism of my system, which you are determined to oppose, allow me to state that the fundamental question is doubtless this: Are the characteristics of the spores more or less *essential* and *constant* than the external characteristics (disposition, form, size, consistence, &c.) of the perithecia? Do you think, for instance, that a *Valsa*, &c., will more readily lose the allantoid form of its spores, or the disposition of its perithecia? I have never seen a *Valsa* vary essentially in the form of its sporidia; but I have seen many variations in the structure of the perithecia. There are some *Calosphæræ*—with all the characteristics of a *Calosphæria*—which are grouped circularly, and others which have their perithecia either circinate or subsolitary. *Leptosphæria Dolium* has the varieties *tecta* and *denudata*, but the sporidia are always the same. *Anthostoma gastrinum* I find completely *Valsioid*, and later *Melogrammoid*, but the sporidia are always the same, &c. In my opinion, therefore, and in that of many other mycologists, the characteristics of the spores are more constant than the others. This being admitted, I think that in any classification we ought to prefer, for the primary division, those characteristics which are the most constant, and in our case these are the spores.

"When I see that Fries, in the primary division of the vast genus *Agaricus*, has preferred the *colour* of the spores to the characteristics of the annulus, volva, hymenophorum, &c., I feel no doubt that if he had had at his disposal the characteristics of the spores of his vast genus *Sphæria*, he would have preferred them.

"You say that the characteristics of the spores give rise to an *artificial* system. But why do you not consider Jussieu's system, in which the primary divisions are fixed by the *number* of the *cotyledons*, artificial? Do you say that only *children and uncultured or deficient intellects* will count the number, not of the septa, but of the cotyledons? You say that the system *vauntingly termed* carpological is equivalent to the old *Linnean system*. Possibly! But I think I am much more correct in saying that the system of the Pyrenomycetes of Fries and of yourself are equivalent to that of Tournefort (about 1680?), in which plants are divided into trees, shrubs, and plants, without taking any account of the characteristics, which are much more important, but much more difficult to preserve. In fact both Fries and you distinguish groups and genera (what genera!) by the naked eye, as Tournefort did; by carpologists, on the other hand, characteristics which are

more intimate (and more constant), are studied and unveiled : precisely as, in the natural method in phanerogamy, great attention is paid to the intimate characteristics of the cotyledons, the albumen, the parts of the fruits and flowers, &c., &c. And it is worthy of notice that in phanerogamy you have at your disposal many distinctive characteristics which are entirely wanting in the groups of Pyrenomycetæ. I regret that I cannot make use of my own language with you, so as to be able to express my thoughts better.

"If I have not arranged the *Perisporiacei* carpologically,* it is merely because I did not wish to upset matters with which I was not sufficiently acquainted ; moreover, the *keys* of the *Perisporiacei* are arranged carpologically, as you might have pointed out in your critique."

"As regards your special observations, I value them very much for the *addenda et emendata* to be published at the end of Vol. II. Only you might have added that I am not the author of the genera *Erysiphella* and *Ascotricha*, and that several of the identifications of the species were suspected by me, *e.g.*, *Dimerosporium* and *Capnodium mangiferum*, *Dimerosporium* and *Asterina Macowani*, &c. As regards the genus *Sporormia*, how can you for instance join *Sp. lageniformis* with a long ostiole to *astomous Perisporium* ? Have you no confidence in your superficial system ? I will end here.

"I should be very much obliged if you would translate this letter into English, and publish it in the next number of 'Grevillea.'"

"Yours, &c.,

"P. A. SACCARDO."

REJOINDER.

Being satisfied that the only certain reward of controversy is waste of time and vexation of spirit, it is not my intention to prolong the present one. The above letter in no way alters my opinion, and I have nothing to retract. That I have protested against an "artificial system" is sufficient, and I have done so from a conviction that it is wrong in principle and retrogressive. It would have been discreditable to me, holding such views, if I had not been "determined to oppose it." That the proposed method is an artificial one, its author does not deny, but seeks to cover his retreat by an allusion to Tournefort, as a rhetorical flourish, although it has no analogy to the point in question. I do not consider it so criminal in Fries that he distinguished groups and genera by the naked eye, as some appear to do. The most

* I use this term in the sense of MM. de Notaris, Tulasne, &c. (*Asci paraphyses*, *sporidia*, and not only *sporidia*).

practical method would be to travel, as it were, from the known to the unknown, from that which may be distinguished by the naked eye, or a pocket lens, gradually upwards to the highest of microscopical powers, which are most essential to distinguish many of the so-called species of modern times, and often fail to reveal their differences. I am not prepared to condemn recklessly a system which originated half a century ago, because it may not have progressed with the perfection of the microscope. However imperfect a system may be which regards natural affinities, it is preferable, as a principle, to a more elaborate artificial one. No one denies that the arrangement adopted by Fries, for instance, however sufficient it might have been at the time, is capable of considerable improvement, and that it is insufficient in detail to meet the wants of the time; but that proves nothing for another system with a different basis. Undoubtedly there was ample field for a complete natural arrangement of the Pyrenomycetes, which should have taken cognizance of all the improvements in instruments and observations of half a century. I confess that I have opposed the system now in question, because it was not the arrangement which increased knowledge of the life history of the Pyrenomycetes led one to expect.

I do not admit that the characteristics of the spores are more constant than the external features of the plant, even after numerous species have been created out of the variations of the spores in one or other of the older species, which would find their way back again in a natural system. But I am indisposed to travel into details of the system as it is; suffice it for me that I do not accept the fundamental principle. I regret to have to differ from the indefatigable author of the "Sylloge," and I repeat again that his work has earned him the thanks of all mycologists, as a record of published species. Some will undoubtedly accept it, but some will not. This is in accordance with our knowledge of human nature. There never was a system or theory without its zealous advocates, but, if this does *not* meet with the universal acceptance which its author seems to have hoped, he will at least have the satisfaction of knowing that his labours will greatly lighten those of his successor, whoever he may be, who may hereafter elaborate a more philosophical system. If the present arrangement should be as generally accepted, and maintain its position as long as that of Fries has done, its author will have good reason to congratulate himself upon his success. I only hope that the prospective author of the new "Systema Mycologicum" of 1936 will, in that event, exhibit more veneration for Professor Saccardo, and a greater respect for his incessant toil, than he has evidenced on behalf of the greatest mycologist that Europe has yet produced.

M. C. COOKE.

NEW BRITISH FUNGI.

BY M. C. COOKE.

(Continued from p. 16.)

Agaricus (Collybia) xylophilus, *Fr. Hym. Eur.*, 114.

Pileus rather fleshy, *campanulate*, lax, then expanded, broadly gibbous, smooth; stem hollow, equal, rather flexuous, fibrillose-striate, whitish; gills adnate, narrow, much crowded, white.—*Fr. Icon. t. 63, f. 2. Cooke Illus. t. 202.*

On stumps. Black Park, Langley.

"A very good species, allied to *Ag. ramosus*, Bull. Cæspitose. Stem hollow, 2-3 in. long, 3 lin. thick, equal, sometimes flexuous, fibrillose-striate, whitish, destitute of a veil, internally fuscous. Pileus slightly fleshy, broad, deep, *campanulate*, 3 in. broad (when flattened 4 in.), commonly obtuse, sometimes furnished with a small umbo, but about the margin at length cracked and split when expanded, broadly gibbous, smooth, moist, whitish, or brownish clay-coloured in the middle. Flesh everywhere very thin, fragile, watery, brownish. Gills adnate, often with a decurrent tooth, rather narrow (1 line broad), much crowded, in our specimens entire. As to the gills allied to *Ag. confluens*, not to be compared in other points with any of our species."—*Fries Mon. II.*, 290.

Agaricus (Mycena) pullatus, *Berk. & Cooke.*

Pileus membranaceous, *campanulate*, obtusely umbonate, dark brown, disc nearly black, sulcato striate to the middle, stem fistulose, elongated, thickened downwards, of the same color, whitish floccose at the base, sometimes rooting; gills scarcely crowded, adnexed, white; odour slightly nitrous.

On the ground amongst dead leaves. Chingford, Oct., Nov., 1882. (*M. C. C.*). Norfolk, (*C. B. P.*)

Stem 3 inches long, 1 line thick. Pileus $\frac{3}{4}$ in. broad, at first dark brown with a tinge of purple, almost black, growing a little paler with age, sometimes with a glaucous bloom. Gills rather broad, quite white. Spores elliptic, smooth. Allied to *Ag. atro-cyaneus* and *Ag. leptcephalus*.

Agaricus (Clitopilus) carneo-albus, *With. Arr. IV.*, 218.

Pileus white, polished, centre rather depressed, edge turned down, about an inch over; stem solid, white, cylindrical, about an inch high, thick as a crow-quill; gills decurrent, salmon-coloured, mostly in pairs, narrow, not crowded.

Heathy places. Epping Forest, Sept., 1882.

The above is Withering's description, with which our plant agrees intimately, but it is doubtful whether Fries had the same plant in view (*Hym. Eur.*, 200), or, if he had, the figures quoted from Kalchbrenner (*Icon. t. 12, f. 2*) are but little like the Epping

specimens. It is, however, quite accurate that they were "inodorous, gregarious, pileus an inch broad, disc at length depressed, rufescent; spores angular." Size and habit very similar to *Agaricus atropunctus*, P.

Agaricus (Pholiota) mustelinus, *Fr. Hym. Eur.*, 225.

Pileus rather fleshy, campanulate, convex, even, smooth, dry; stem fistulose, even, pallid-whitish, farinose above the reflexed ring, thickened at the base, and villose-white; gills adnate, rather distant, tawny cinnamon.—*Mich. Gen. t.* 80, f. 6.

On stumps. Near Guildford (T. Howse).

Solitary. Pileus hardly an inch broad, rufous or testaceous; stem less than an inch long, thickened at the base, which is surrounded and attached by a white tomentum. Not included in Fries' *Mon. Hym. Sueciæ*.

Agaricus (Inocybe) hæmactus, *Berk. & Cke.*

Pileus fleshy, compact, obtuse, campanulate, floccosely fibrillose, disc subsquamose, darker; stem solid, smooth, scarcely fibrillose, whitish above, æruginous at the base, nearly equal; gills adnate, pallid, at length clay-colour; flesh everywhere turning blood-red where touched or wounded.

On lawn. Credinhill Court, Oct., 1882.

Pileus about an inch broad, umber, margin pallid, clad with long, darker fibrils, the obtuse disc darkest, and somewhat scaly; stem nearly 2 inches long, 3-4 lines thick, æruginous at the base, the colour penetrating through the flesh. Everywhere changing slowly to blood-red when wounded. Spores elliptical, attenuated towards one end, smooth. In some respects agreeing with *Ag. calamistratus*, but not squarrose.

Cortinarius (Myxadium) mucifluus, *Fr. Hym. Eur.*, 355.

Pileus rather fleshy, campanulate, then expanded, covered with an evanescent hyaline gluten, margin striate; stem attenuated downwards, soft, viscid from the fugacious floccose squamose veil; gills adnate, distinct, clay-colour, then watery cinnamon.—*Fr. Icon. t.*

On the ground. Around Hereford, &c., Oct., 1882.

"Allied to *C. collinitus*, and for a long time united with it as a variety, but apparently quite distinct. It differs (1) in the spongy stem, attenuated downwards, white; (2) pileus thinner, campanulate, then expanded, at length reflexed and repand, membranaceous, margin striate; (3) colour of the pileus livid, clay colour, when dry of an opaque tan colour; (4) gluten of the pileus thin, hyaline, diffluent, not forming a thick persistent bright-coloured pellicle; (5) odour sweet. Gills clay-coloured, then cinnamon. No violet in the whole fungus."—*Fr. Mon.* II., 37.

Cortinarius (Hydrocybe) renidens, *Fr. Hym. Eur.*, 392.

Pileus rather fleshy, convex, then plane, even, smooth, shining, tawny (ochraceous); stem stuffed, firm, equal, smooth, yellow as well as the fibrillose veil; gills subadnate, crowded, thin, tawny.—*Fr. Icon. t.* 162, f. 1.

In shady woods. Highbeach, Epping.

“ With the habit of *C. armeniacus*, but smaller and of a brighter colour, readily distinguished—especially by the yellow veil; stem firm, stuffed, $1\frac{1}{2}$ to 3 in. long, 3 to 4 lines thick, quite equal, externally rather cartilaginous, but wholly splitting into fibrils; colour of the pileus yellowish, growing pallid, then fulvous; veil lax, fibrillose, fugacious, yellow; pileus slightly fleshy, firm, convex, then plane, obtuse or gibbous, 1 to 2 in. broad, quite smooth, shining, when moist ferruginous, fulvous, when dry ochraceous, usually with the disc becoming pale; flesh thin, splitting, paler; gills adnate, but also seceding and free, rather crowded, entire, at first pallid cinnamon, then fulvous; spores dark ochre; odour faint, not at all radish-like.”—*Fr. Mon.* II., 104.

Paxillus panæolus, *Fr. Hym. Eur.*, 402.

Pileus thin, convex, plane, then rather depressed, smooth, moist, whitish, margin involute, thin; stem stuffed, striate fibrillose, rufescent, incrassated downwards; gills slightly decurrent, crowded, narrow, at length watery ferruginous.—*Hoffm. Icon.* t. 10, f. 1.

On the ground in pine woods, &c. (*C. Bucknall*).

“ Somewhat gregarious, at first externally and internally wholly dirty white, then becoming yellowish, gills at length watery cinnamon; stem fleshy, stuffed, 1 inch, or a little more, long, 3 lines thick, striate fibrillose, thickened below; pileus fleshy, compact, convex, then expanded, and somewhat depressed, even, smooth, spotted when moist, 1 to 2 in. broad; margin thin, involute, villose; gills slightly decurrent, crowded, narrow, rather veined at the base, separated by a horny line from the pileus; spores watery ferruginous.”—*Fr. Mon.* II., p. 117. Gills readily separating; spores small, subglobose.

Lactarius pargamenus, *Fr. Hym. Eur.*, 430.

White. Pileus fleshy, tough, convex, then a little depressed, repand, without zones, rugulose, smooth; stem stuffed, smooth, becoming discoloured; gills *adnate*, very narrow, horizontal, much crowded, branched, white, then straw-coloured; milk acrid, white.—*Batsch, fig.* 59.

In woods. Hayward Forest, Epping, &c.

“ Wholly white, filled with a very acrid white milk. Allied to *L. piperatus*, from which it differs in the stuffed stem, at length softer within, elongated (3 in.), unequal, attenuated downwards, and ascending, entirely smooth; pileus thinner, tough, elastic, often irregular and excentric, sometimes flexuous, at first convex (not umbilicate), then becoming plane, surface quite smooth, but unpolished, and in a peculiar manner rugose; gills adnate, either decurrent, very much crowded, very narrow (scarce 1 line broad), always straight and horizontal, or arcuate, or inclined upwards, soon straw-coloured; flesh very milky, but the gills slightly.”—*Fries Mon.* II., 166.

Not uncommon, but hitherto confounded with *L. piperatus*.

Stereum ochroleucum, *Fr. Hym. Eur.*, 639.

Pileus between coriaceous and membranaceous, free, expanded, flaccid, silky, zoned, hoary; hymenium even, smooth, yellowish.

On prostrate trunks. Kew Gardens, Nov., 1882.

"Commonly broad, zones same colour, or tawny; coating of the pileus usually falling away; hymenium often rimose, as in *Corticium*."—*Fries*.

Often effused, and then resembling a *Corticium*, but sometimes the margin is reflexed, forming a white silky zoned pileus. Hymenium pale flesh colour or ochraceous, often cracked with age or drying, like *Corticium*. It has some resemblance to thin forms of *Stereum purpureum*, from which it is at once distinguished by the different colour of the hymenium. Probably the species of *Fries*, but neither the Rev. M. J. Berkeley or myself have seen an authentic specimen.

Ramularia Malvæ, *Fckl. Symb.*, p. 360.

Tufts lax, pallid, seated on orbicular, elongated, or irregular bleached spots; floeci erect, mostly simple; conidia sub-cylindrical, obtuse, simple or at length uniseptate, hyaline (0.03×0.005 mm.).

On leaves of *Malva moschata*. Forres (*Rev. J. Keith*).

Probably only a variety of the species described by Fuckel, of which we have seen no specimen. Above is description of the Scotch form.

Cercospora Galthæ, *Cke*.

Spots small, orbicular, pallid, girt by a dark brown marginal ring. Threads very delicate, short, scarcely branched, hyaline. Spores cylindrical, obtues, 1-2 septate, thin, hyaline, but little thicker than the threads, (about $0.015-0.02 \times 0.002$ mm.)

On leaves of *Caltha palustris*. Forres. (*Rev. J. Keith*.)

We have not been able to find such a delicate species described, although it is difficult in these days, when species are swarming like bees, to ascertain what have been described, especially with the "Jahresbericht" for 1878, still uncompleted.

FUNGUS FORAYS, 1882.

CRYPTOGAMIC SOCIETY OF SCOTLAND.—The Annual Conference of this Society was held at Kenmore, Perthshire, on September 4th and following days. We have no report of the meeting, but hear that it was satisfactory.

ESSEX FIELD CLUB.—The Annual Foray, in Epping Forest, took place on the 23rd of September, and was in all respects satisfactory. Several interesting species were found, notably *Cortinarius renidens* for the first time in Britain. And altogether, twenty-two species were added to the Forest list of Hymenomyces. In the evening a meeting was held, at which the results of

the day were recounted, and papers read on "Edible Fungi," by H. T. Wharton, M.A. "Fairy rings," by W. G. Smith. "Marine Algæ of the Essex Coast," by E. M. Holmes, and a demonstration of "the Uredines of Wheat," by C. B. Plowright. Specimens collected during the day were labelled and exhibited in a separate room.

WOOLHOPE NATURALISTS' FIELD CLUB.—The very popular and interesting meetings of the week commenced on Tuesday, October 3rd, by a visit to Wycliffe woods, near Ludlow. On Wednesday an excursion was made to Dinedor. On Thursday the Public Foray was made at Credenhill Camp—and on Friday the excursions concluded with a visit to Hayward Forest. Each evening was occupied by a conversazione, at which various papers were read—viz., "Heterœcism of the Uredines" and "the Classification of the Uredines," by C. B. Plowright. "Dimorphism in *Rhytisma radicale*," by W. Phillips. "On some English Bird names," by H. T. Wharton, M.A. On "*Glæocapsa sanguinea*," by the Rev. J. E. Vize. On "Breconshire Raptures," by E. Cambridge Phillips. In addition to an "Historical account of Credinhill Camp, by Dr. Bull, read at Credinhill, under the shadow of the camp, on the day of the excursion.

And in the years that follow,
When all of us are stiff,
And can no longer clamber
Up hillside, camp, or cliff.
With weeping, and with laughter,
Still be the story told,
How the good "Doctor" stormed the camp,
In the brave days of old.

A detailed account of these meetings, by C. B. Plowright, was printed in "The Gardener's Chronicle" for October 14, 1882.

HACKNEY NATURAL HISTORY SOCIETY.—This Society had a field day for the collection and study of Fungi in Epping Forest, on October 21st, when the members assembled at Chingford at noon amid a drenching rain, which continued without cessation throughout the rest of the day. Notwithstanding this drawback, some eighty species were determined or collected, and in the evening exhibited, and commented upon at Fairmead Lodge. An account of this Aquatic Foray, from the vigorous pen of Mr. Worthington Smith, appeared in the "Gardener's Chronicle," of November 4.

HERTFORDSHIRE NATURAL HISTORY SOCIETY.—The first Fungus Foray of this Society, took place in Cassiobury Park, Watford, on November 4th. Although late in the season, and a park not the very best of localities for variety of species, no less than upwards of seventy species of Hymenomycetes were collected and determined, all of which were of interest, since no authentic record has hitherto been made of the Fungi found in the county. The party was in charge of Mr. Hopkinson, one of the secretaries.

With but one exception the weather was fine and favourable, but it cannot be said that this has been a prolific year for fungi. In London mushrooms have been scarcer, and higher in price than they have been known for many years, hence we have resorted to other species, to the great alarm of many of our personal friends, and can now add to our experience a knowledge of the flavour of *Agaricus (Amanita) vaginatus*, Fr., *Agaricus (Tricholoma) nudus*, Bull., *Agaricus (Armillaria) mucidus*, Schr., *Agaricus (Clitocybe) fragrans*, Sow., and *Hygrophorus coccineus*, Fr. with a repetition of *Russula heterophylla* and *cyanoxantha*. All these in turns suffered demolition, and we still live to record our preference for *Agaricus nudus*, and the *Russulæ*, although *Agaricus mucidus* is sufficiently delicate to warrant a better acquaintance. We had almost forgotten *Agaricus (Pleurotus) ulmarius*, Fr. *Agaricus (Clitocybe) nebularis*, Fr., *Coprinus atramentarius*, Fr., *Coprinus comatus*, Fr., *Hygrophorus pratensis*, Fr., and *Boletus granulatus*, L., as amongst other of the delicacies of the present season in which we have indulged.

BRITISH MOSS FLORA.

Dr. Braithwaite has issued the sixth part of his excellent "British Moss Flora." All we have to regret is that it does not come to hand so rapidly as we could wish, and this regret is shared generally by British Bryologists. The present part continues the *Dicranaceæ*, giving the genera *Seligeria*, *Brachydontium*, *Blindia*, *Didymodon*, *Campylopus*, *Dicranoweissia*, and the first part of *Dicranum*. The seventh part, completing the *Dicranaceæ*, is in preparation. The illustrations as well as the letterpress are so excellent that we appeal to them in justification of our impatience at the sober pace at which the work has hitherto progressed. Nevertheless we believe that no blame attaches to the author, but to difficulties he has had to surmount with the plates.

MYCOLOGIC FLORA OF BELGIUM.

Dr. Lambotte has just published, in three volumes, a *Fungus Flora*, entitled "*Flore Mycologique de la Belgique*," which will prove very useful in Belgium, as well as Northern France, as detailed descriptions are given in French, as well as analytical keys to the genera. We note that many of the species have indications useful to the mycophagist, such as edible, poisonous, suspected; and in some cases we were reminded of the edible qualities for which they are reputed, but which we had never put to the test, notably *Agaricus (Tricholoma) nudus*, which has proved so excellent that we are grateful to Dr. Lambotte for having reminded us. We can by no means endorse his very qualified opinion of *Ag. nebularis*, which is considered one of the safest and soundest of esculent fungi in this country.

SOME FRESH WATER ALGÆ.

Fungi are sometimes said to be very erratic organisms, but I doubt if their uncertainties are much greater than are found amongst the Fresh Water Algæ. In the past summer, quite unexpectedly, the very beautiful water-net (*Hydrodictyon utriculatum*) was found floating in a small pond in the pleasure grounds of Kew Gardens in such profusion that a barrowfull might soon have been collected. In three weeks another visit was paid to the same spot, in order to obtain some specimens for exhibition, and not a vestige could be seen on the surface. They might have gone to the bottom, but practically they were not obtainable. No one appears to have ever recognised the plant in this pond before, and possibly it may not be found again.

Passing through the propagating houses nearly at the same period of the year, the moss, which was growing freely on the damp walls, was observed to be encrusted with a glaucous Alga, not yet, as far I know, recorded as British. This was the species called in Rabenhorst's "Flora" *Scytonema cinereum*, variety *Micheli*, which is the *Drilosiphon muscicola* of Kützinger. It was such a prominent object that one could scarce avoid feeling surprise that it should never have been recorded.

Passing on another occasion the large pond in the pleasure ground, I noticed some globose olivaceous tufts of an Alga floating freely in the water or attached to small fragments of dead grass. The tufts were about the dimensions of a marble. Finding myself in some doubt as to its determination, I sent specimens to Professor Nordstedt, the result being that he came to the conclusion that it was the species which Dr. Kirchner had included in his "Schlesischen Algen" under the name of *Plectonema mirabile*, as of Thuret, but which did not, from the dimensions, appear to be Thuret's species. The threads were very nearly the size of those given by Dr. Kirchner, and if not his species, it will come very near to it. If this assumption proves correct, the species will stand as *Plectonema Kirchneri*, whilst Thuret's name of *Plectonema mirabile* will still be retained to represent the old *Calothrix mirabilis*, Agardh, which is certainly distinct from the Kew specimens.

Apropos of new species, a minute green, filamentous Alga has been found in some five or six localities with a small radius in Yorkshire, which for some time has proved a puzzle, and even yet has not perhaps found more than a temporary location in the genus *Microthamnion*, much more delicate than either *M. strictissimum* or *M. Kützingerianum*, which for the time we have been content to call *Microthamnion vexator*. The figure 107 in Rabenhorst's "Algæ" (p. 302) is much more like our plant than it seems to be of *M. strictissimum*, supposing it to be magnified about 320 diameters. Professor Wittrock, to whom the plant has been submitted, does not recognise it as any described species, and suggests for it a location in the above-named genus.

THREE ASIATIC FUNGI.

BY M. C. COOKE.

The following were collected by Maingay at the same time that his collection of Lichens was made :—

Diplodia pterocarpi, Cke.

Sparsa, semi-immersa, punctiformis; peritheciis atris, opacis, subglobohis; sporis ovato-ellipticis, obtusis, uniseptatis, fuscis ($\cdot 01\text{--}\cdot 012 \times \cdot 006\text{--}\cdot 007$ mm.), vix constrictis.

On bark of *Pterocarpus Indicus*. Malacca.

The perithecia have somewhat the appearance of a *Verrucaria*, with which the species was probably confounded when gathered. The spores are smaller than usual in this genus, and less opaque.

Hypoxyton cocoinum, Cke.

Sparsa, emergens, atra, nitida, subconoidea vel hæmispherica, simplex vel confluens, ad basin applanata; ascis cylindricis, stipitatis; sporidiis ovato-ellipticis, obtusis, simplicibus, atrofuscis ($\cdot 01\text{--}\cdot 012 \times \cdot 066$ mm.).

On stems and petioles of coconut palm. Malacca.

Conisphæria Maingayi, Cke.

Sparsa, semi-immersa, atra, subconoidea, papillata; ascis cylindricis, stipitatis; sporidiis uniseriatis, fusiformibus, utrinque acutis, hyalinis, 3-5 septatis, nec constrictis ($\cdot 025 \times \cdot 004$ mm.).

On bark. Near Shanghai.

The above specimens are in the Herbarium of the Royal Gardens at Kew.

CRYPTOSPHERIA MILLEPUNCTATA, GREV.

BY M. C. COOKE.

In 1826 Dr. Greville published in his "Scottish Cryptogamic Flora," a plate and description of a *Sphæria* which he named *Cryptosphæria millepunctata*, with this diagnosis: "Perithecia numerous, immersed beneath the epidermis, sub-regularly scattered, globose, black, the orifice very short, obtuse, scarcely exerted; thecae acute at the apex; the sporidia linear, curved."—*Pl.* 201. And he says of it: "On the decaying branches of the common Ash (*Fraxinus excelsior*), the whole year, frequent." And again he says: "The branches of the Ash tree producing this species seem to the naked eye to be covered with innumerable minute black dots. Under the microscope these are found to be the orifices of perithecia concealed beneath the epidermis." And yet again he says: "I have never seen it except upon the Ash; but in this country it is of very frequent occurrence." Two years previous to this (1824) it had also been described in similar terms by Greville, under the same name in his "Flora Edinensis" (p. 360): "Nothing," he says, "is visible of this species to the

naked eye but the black dots on the epidermis. The sphaerules, which are in the substance of the bark, fall with it."

One would have thought, with so circumstantial a description, there would never have been the slightest doubt as to what species it was which Greville intended.

In 1836 Berkeley, in the fifth volume of the "English Flora," transfers Greville's name as a synonym to *Sphaeria corticis*, Sow., a small figure having been given in Sowerby's Fungi, pl. 372, fig. 5, at about 1797, and called by him *Sphaeria corticis*, but without any statement as to what branches the *Sphaeria* was attached, or the slightest indication of the fruit. It is possible, even probable, that it was the same as Greville's, judging from the figures, but the specimen in Sowerby's herbarium at once sets the question at rest. It is a piece of ash twig, with the *Sphaeria millepunctata* upon it. Berkeley therefore was right, as proved by Greville's authentic specimens, and Sowerby's authentic specimens, in regarding the two as absolutely identical. Then, in addition, Berkeley quotes *Sphaeria populina*, Pers. Ic. Pict. t. 21, f. 5, 6, as a synonym. Was he accurate in this? It might be that he was so, and it might *not*, for we have never seen an authentic specimen of the plant which Persoon called *S. populina*.

As if still further to mix up uncertainties, Fries, in his "Systema," published in 1822, adopts Sowerby's name of *Sphaeria corticis*, and gives *Sphaeria populina* of Persoon as a synonym, the habitat of Fries's plant being "In cortice *Populi*."

If we assume that there were two species similar in external appearance, one growing on ash, which was, as we have already seen, the *Sphaeria millepunctata* of Greville, and the *Sphaeria corticis* of Sowerby; the other growing on poplar, which was the *S. populina* of Persoon, and the *Sphaeria corticis* of Fries, we have evidence that Sowerby's figure without description was insufficient, inasmuch as it could be made to represent two species, and therefore the name of *Sphaeria corticis*, Sow., should have been dropped in favour of *S. millepunctata*, Grev., and the *S. corticis*, Fries, which was based on an insufficient figure, without description, should never have taken the place of *S. populina*, Pers. For our present aim we will assume two species, and call them *S. millepunctata*, Grev., on ash ("never seen except upon the ash"), and *Sphaeria populina*, Pers., on poplar.

In the "Handbook" we restored the name of *S. millepunctata*, but quoted the synonyms of both species (supposing them really to be distinct) under the one name.

We come now to Nitschke "Pyrenomyces Germanici" (1867), and, in so far as we understand it, we find him describing the *Sphaeria* on poplar (p. 161), but giving it the name of *Valsa millepunctata* (Grev.), with *S. corticis*, Sow., and *S. populina*, Pers., as well as the figure of Greville under it. Just, in fact, reversing the species, for he has another, by the name of *Valsa eunomia* (Fr.), on ash, quoting *Sph. corticis*, Curr. (which we know was

the same as *S. millepunctata*, Grev., from the specimens still extant), and also Fuckel's specimen, No. 1800, which in our copy is on ash, and identical with Greville's species; whilst No. 908, which Fuckel quotes under *S. millepunctata*, Grev., is a species which we venture to say Greville never saw.

Afterwards (1869) Fuckel repeats, in his "Symbolæ" (p. 212), the same errors.

We come now to Saccardo's "Sylloge" (1882), the last and most comprehensive work on the *Pyrenomycetes* yet published. Here we are happy to recognize a manifest improvement. (For the time we can forget any differences of opinion.) We find in the first place Greville's old generic name restored, and the reasons we will not discuss, but the species is also put right, so that *Cryptosphæria millepunctata*, Grev., is just what he intended it to be, without quoting Sowerby's dubious figure of *S. corticis*, but adding as a synonym the *Sphæria eunomia* of Fries, in which he is doubtless justified. During the past fifteen years specimens have been distributed on the Continent under Greville's name, which were not his species; whilst Greville's species has persistently been issued under another name, and we have continued to protest against the error, in the full consciousness that we, on this side the Channel, must be permitted to know what was the species so common with us on the ash, to which Greville assigned a name. In addition *Cryptosphæria populina* (Pers.) is the name under which Saccardo records the *Sphæria populina* of Persoon, with the *Sph. corticis* of Fries as a synonym, at the same time admitting that it is the *Valsa millepunctata* of Nitschke, Fuckel, Karsten, and even of Saccardo himself (previously), but not of Greville. If the same care has been exercised in other species as in these (and there is no reason to suspect otherwise), then the more close our relationship with the "Sylloge" becomes, the more we shall appreciate its value, apart from any question of classification.

ON THE CHEMICAL REACTION OF THE THALLUS OF *LECANORA SMARAGDULA*, Wahl. By E. G. Varenne.—In Mr. Leighton's "Lichen Flora," the chemical reaction of *Lecanora smaragdula*, Wahl., is symbolized thus: K— C—. In specimens of this Lichen met with in the neighbourhood of Penzance, and which were parasitical, as it were, on the thallus of rock crustaceous Lichens, such as *Lecidea petræa*, *Lecidea concentrica*, &c., the reaction clearly is K. yellow, then red, C—. Being anxious for the opinion of a Lichenologist of experience in this matter, I requested Mr. Holmes to test his specimens of *L. smaragdula* for me. Mr. Holmes found the action as described above, K. yellow, then red C—. Mr. Holmes's specimen was an authentic one undoubtedly, having been given to that gentleman by a distinguished Lichenologist, Dr. Crombie.

ILLUSTRATIONS OF BRITISH FUNGI.

The following notice has been issued with Part XII:—

“Notwithstanding the exercise of considerable care in the selection of figures for illustration, two or three corrections must be made in the Plates already issued.

“Plate 33, called *Agaricus aurantius*, Schf., is not that species, but evidently a form of *Agaricus robustus*; the true *Agaricus aurantius* will be illustrated shortly.

“Plate 60, called *Agaricus imbricatus*, is clearly *Agaricus vaccinus*. The figure of *Agaricus imbricatus*, prepared for the succeeding part, will exhibit the difference.

“Plate 84, called *Agaricus flaccidus*, should have been *Agaricus inversus*, as *Agaricus flaccidus*, and an intermediate form, *Agaricus lobatus*, Sow., are published on succeeding plates.

“It is hoped that the *Leucospori* will be completed with the 16th or 17th Part, and then Title Pages and Classified Index will be published for binding them in two volumes. Every effort will be made to render this portion as complete as possible, although it is certain that a few species will have to be omitted, as drawings of them cannot be obtained.

“M. C. COOKE.”

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A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY
AND ITS LITERATURE.

ON XYLARIA AND ITS ALLIES.

By M. C. COOKE.

Having gone over the genus *Xylaria*, as represented in Saccardo's "Sylloge," we have determined upon presenting the results in a form which may serve as a supplement to that portion of the volume. To the limitation of the genus in the work cited we have no restrictions to offer, but, accepting the limits as defined, we have some few additions to suggest, some emendations to offer, and a re-arrangement to propose. These will be considered under their respective headings.

MEASUREMENTS.—Annexed is a series of measurements of sporidia, obtained, as we believe, from authentic specimens, some in our own possession, others in the Paris Collection, and others in the Herbaria attached to the Royal Gardens, Kew; those of Montagne, Leveille, and Berkeley being from specimens derived from the authors. Wherever there was no original specimen at our disposal we have accepted the Rev. M. J. Berkeley's determination. The Borneo specimens were communicated to us by Baron V. Cesati. Although we have had access to 112 out of the 153 species enumerated in the Sylloge, there still remain 40 of which we have no practical knowledge.

11. *Xylaria melanaxis*, Ces.
Sporidia $\cdot 0035 \times \cdot 002$ mm.
14. *Xylaria hæmorrhoidalis*, B. & Br.
Sporidia lanceolate, $\cdot 035\text{--}\cdot 04 \times \cdot 01$ mm.
15. *Xylaria Gardneri*, Berk.
Sporidia $\cdot 003 \times \cdot 002$ mm.
16. *Xylaria Guyanensis*, Mont.
Sporidia $\cdot 006\text{--}\cdot 007 \times \cdot 004$ mm.
18. *Xylaria phosphorea*, Berk.
Sporidia $\cdot 01\text{--}\cdot 012 \times \cdot 004\text{--}005$ mm.
22. *Xylaria fistuca*, Berk.
Sporidia $\cdot 01 \times \cdot 004$ mm.
27. *Xylaria conocephala*, B. & C.
Sporidia $\cdot 022 \times \cdot 006$ mm.

29. *Xylaria allantoidea*, Berk.
Sporidia $\cdot 01\text{--}\cdot 012 \times \cdot 0035$ mm.
33. *Xylaria Domingensis*, B.
Sporidia lanceolate, $\cdot 02 \times \cdot 0035\text{--}\cdot 004$ mm.
36. *Xylaria fistulosa*, Fr.
Sporidia $\cdot 02 \times \cdot 0035$ mm.
40. *Xylaria grammica*, Mont.
Sporidia $\cdot 015\text{--}\cdot 018 \times \cdot 004$ mm.
41. *Xylaria Hegeliana*, Fr.
Sporidia $\cdot 03\text{--}\cdot 035 \times \cdot 0065\text{--}\cdot 007$ mm.
42. *Xylaria obovata*, Berk.
Sporidia $\cdot 03 \times \cdot 008$ mm.
43. *Xylaria Poiteani*, (Lev.)
Sporidia $\cdot 018 \times \cdot 004$ mm.
45. *Xylaria obtusissima*, Berk.
Sporidia $\cdot 01\text{--}\cdot 012 \times \cdot 0035$ mm.
46. *Xylaria plebeja*, Ces.
Sporidia $\cdot 01 \times \cdot 003$ mm.
51. *Xylaria rhytidophlæa*, Mont.
Sporidia $\cdot 01\text{--}\cdot 011 \times \cdot 005$ mm. (Cayenne.)
" $\cdot 01\text{--}\cdot 013 \times \cdot 006$ mm. (Australia.)
61. *Xylaria zeylanica*, Berk.
Sporidia $\cdot 018 \times \cdot 0035$ mm.
62. *Xylaria microceras*, Mont.
Sporidia $\cdot 012 \times \cdot 004$ mm.
63. *Xylaria Wrightii*, B. & C.
Sporidia $\cdot 03 \times \cdot 0085$ mm.
Scarce distinct from *X. involuta*, Kl.
64. *Xylaria cudonia*, B. & C.
Sporidia almond-shaped, $\cdot 013 \times \cdot 008$ mm.
68. *Xylaria exalbata*, B. & Br.
Sporidia $\cdot 012 \times \cdot 003$ mm.
70. *Xylaria anisopleura*, Mont.
Sporidia $\cdot 035 \times \cdot 01$ mm.
72. *Xylaria complanata*, Ces.
Sporidia $\cdot 01\text{--}\cdot 012 \times \cdot 005$ mm.
74. *Xylaria dealbata*, B. & C.
Sporidia $\cdot 04 \times \cdot 01$ mm.
79. *Xylaria tabacina*, Kickx.
Sporidia $\cdot 022\text{--}\cdot 025 \times \cdot 005$ mm.
= *Xylaria involuta*, Klotsch, which is the older name
85. *Xylaria rhopaloides*, (Kunze.) Mont.
Sporidia $\cdot 01 \times \cdot 005$ mm.
98. *Xylaria collabens*, Mont.
Sporidia $\cdot 03 \times \cdot 01$ mm.
102. *Xylaria radicata*, B. & C.
Sporidia elliptic, $\cdot 008\text{--}\cdot 01 \times \cdot 004$ mm.
103. *Xylaria scruposa*, Fr.
Sporidia $\cdot 02 \times \cdot 005$ mm.

105. *Xylaria Cullenia*, B. & Br.
Sporidia $\cdot 016 \times \cdot 005\text{--}\cdot 006$ mm.
108. *Xylaria spathulata*, B. & Br.
Sporidia $\cdot 006 \times \cdot 003$ mm.
112. *Xylaria cupressiformis*, Becc.
Sporidia $\cdot 022\text{--}\cdot 025 \times \cdot 005$ mm.
120. *Xylaria Guepini*, Fr.
Sporidia $\cdot 008 \times \cdot 004$ mm. (sec Fries.)
Xylaria eupeliaca, Ces.
Sporidia $\cdot 005 \times \cdot 0025$ mm. (sec Cesati.)
132. *Xylaria subterranea*, Schuz.
Sporidia $\cdot 017\text{--}\cdot 02 \times \cdot 005$ mm.
133. *Xylaria ianthino-velutina*, Mont.
Sporidia $\cdot 013 \times \cdot 004$ mm.
Also the same in *Xylaria monilifera*, Berk., and what we believe to be *Xylaria Apeibæ*, Mont.
139. *Xylaria scopiformis*, Mont.
Sporidia $\cdot 01\text{--}\cdot 012 \times \cdot 0035$ mm.
144. *Xylaria phyllophila*, Ces.
Sporidia $\cdot 02 \times \cdot 01$ mm.
150. *Xylaria gracillima*, Fr.
Sporidia cylindrical, $\cdot 013 \times \cdot 0035$ mm.
151. *Xylaria rhizomorpha*, Mont.
Sporidia $\cdot 005\text{--}\cdot 006 \times \cdot 0025$ mm.

EMENDATIONS.—We would suggest the following emendations in respect of species with which we are acquainted, presumably on sufficient authority.

All that regards arrangement will be alluded to hereafter, together with a proposed re-arrangement, which need not be discussed at length, as it would occupy a large amount of space, and there is no substantial difference between ourselves and Professor Saccardo on the principles upon which such arrangement should be based.

Primarily, we would exclude from the genus Nos. 24, 80, and 81, as these were relegated to a new genus, *Glaziella*, by Berkeley, in 1879, as—

24. *Glaziella abnormis*, (B.) Cke.
80. *Glaziella aurantiaca*, Berk.
81. *Glaziella splendens*, Berk., together with
Glaziella vesiculosa, Berk.
Glaziella ceramicchronm, B. & Br.

They are nearer to *Hypocrea* than *Xylaria*, and would occupy an analogous position in *Hypocreacei* to *Daldinia* in *Xylarieti*. The diagnosis of the genus is—“Stroma subglobose, brightly coloured, fleshy. Perithecia pallid, filled with hyaline gelatin.” Although *Spharia compuncta*, Jungh., is by no means a good *Xylaria*, it could scarcely be transferred to this genus (82) and would be better in *Hypoxylon*.

In the next place there are some species that are repeated under other names; for example—

35. *Xylaria escharoidea*, Berk., must include also *Xylaria piperiformis*, Berk. (131). *Xylaria mutabilis*, Curr., in Linn. Trans., and *Xylaria flagelliformis*, Curr. in Linn. Trans., which latter is only a sterile condition of his *Xylaria mutabilis*, as his own figures will show. The sporidia in all three species are absolutely identical.

55. *Xylaria Telfairii*, Berk. } should stand as synonyms of

79. *Xylaria tubacina*, Kickx. } *Xylaria involuta*, Klotzsch, which is the other name, whilst 63 *Xylaria Wrightii*, B. & C., appears to present no specific difference.

67. *Xylaria acicula*, Ces., according to specimen from Cesati does not differ from *X. aristata*, Mont.

75. *Xylaria cerebrina* (Fec.), is certainly an *Hypoxyton* with a coloured stroma, according to specimens in Herb. Paris.

120. *Xylaria Guepini*, Fr., and

Xylaria enpeliaca, Ces., can scarcely be regarded as the same species.

133. *Xylaria ianthino-velutina*, Mont., and

153. *Xylaria Apicibæ*, Mont., as well as

Xylaria moniliformis, Berk. in Herb., must be held to constitute one species, as Saccardo suspected.

Although we are hardly prepared to expect that our suggestion would ensure Professor Saccardo's approval, we would transfer his Nos. 83 and 84 to the genus, or subgenus, *Rhopalopsis*, hereafter designated.

ADDITIONS.—The following species are not included in the "Sylloge," some of them never having been published. They are all described here, although some of them could not be included in any list except as 'species dubiæ,' such as *Xylaria tuberosa*. Their relationship to other species, as we comprehend it, will be indicated in the classified list at the close of this communication.

2. *Xylaria australis*, Cooke.

Stromate clavato, nudo ($\frac{1}{2} \times \frac{3}{4}$ in.), sursum incrassato, obtuso, lævi, fusco, ex ostioliis mimitissimius obscure punctato, intus albido dein cavo; stipite elongato ($1\frac{1}{2}$ -2 in.) glabro, tenui ($\frac{1}{4}$ in.) nigricante; ascis cylindraceutis, stipitatis, sporidiis arcte lanceolatis, fuscis ($.615 \times .003$ mm.).

On wood. Endeavour River, Australia.

Resembles very much the description of *X. euglossa*, Fr., but the sporidia are of a different form.

10. *Xylaria olobapha*, Berk. in Herb. Kew.

Stromate erecto, clavato, rufo, infra in stipitem brevem attenuato. Stipite tenui, glabro, aequali; peritheciis globosis, atris, ostioliis punctiformibus, planis; ascis cylindraceutis, stipitatis; sporidiis lanceolatis, rectis vel curvulis, fuscis ($.02-.022 \times .0085$ mm.).

On trunks. Brazil, Mexico.

Whole plant 2-2½ inches high, of which the club occupies half. Club 1 c.m. thick.

20. **Xylaria Berkeleyi**, *Mont., Ann. Sci. Nat.*, 1855, III., 104.

Stromate erecto, suberoso, atro, cylindrico-clavato, obtuso, papillato; intus albo. Stipite gracili, glabro, concolori. Peritheciis globosis, numerosis, ostiolis prominulis, asperulis; ascis cylindraceis, stipitatis; sporidiis arcte fusiformibus, rectis, curvulisve, fuscis ($.018-.022 \times .003-.004$ mm.).

On wood. Cayenne.

From specimens communicated by Dr. Montagne.

23. **Xylaria escharoidea**, *Berk.*

To this species must be referred, as synonyms, *Xylaria nigripes*, Klotsch, *Xylaria piperiformis*, Berk., *Xylaria mutabilis*, Curr. Linn. Trans. (1876), and *Xylaria flabelliformis*, Curr. Linn. Trans. (1876), t. 21. The latter being the sterile form. The description by Klotsch ("Linnea," vii., p. 203) dates from 1832, so that his name certainly appears to demand precedence. We have had the good fortune to see and examine the type specimens of *all* the above-named species, and the sporidia are identical.

25. **Xylaria multifida**, (*Sphæria multifida* Kunze, see Leveille, *Ann. Sci. Nat.*, 1845, iii., 45.)

Stromate conidifero erecto, furcato-partito, palmato-que, albido. Stromate ascigero simplici, erecto, atro, clavato; stipite æquilongo, tenui, atro, glabro (?); peritheciis globosis, atris, prominulis: ascis cylindraceis, stipitatis; sporidiis fusiformibus, obtusis, in-æquilateralibus, fuscis ($.01-.012 \times .004-.005$.)

On trunks. Java, and Central America, in Herb. Paris.

Greatly resembling *X. hypoxylon*, of which it may be a variety.

26. **Xylaria acicularis** (*Sphæria, Hypoxylon, acicularis*, Berk. Hook. Journ., 1842, p. 141.)

Suberosa, acicularis, simplex, rarissime furcato-palmata, lævis; stipite lævi, vel subplicato; clavulâ elongatâ, lineari, cum stipite confluyente, crustâ laccato atro farinâ argillaceâ velatâ reticulato-rimosâ; peritheciis globosis; ostiolis prominulis.

On wood. Surinam.

$3-3\frac{1}{2}$ in. high, 1 line or more thick.

28. **Xylaria Cordovensis**, *Berk. in Herb. Kew.*

Stromate erecto, clavato, atro ($1-1\frac{1}{2}$ in.); stipite tenui, glabro, semi-unciali, clavulâ utrinque sub-attenuatâ, supra obtusâ; peritheciis globosis, prominulis; ascis cylindraceis, stipitatis; sporidiis arcte fusiformibus, rectis curvulisque, fuscis, ($.015-.016 \times .004$ mm.).

On trunks. Cordova, (Salle No. 95.)

34. **Xylaria Mellisii** (*Hypoxylon Mellisii*, Berk. in Herb.)

Stromate coriaceo, atro, stipitato, ramuloso. Clavulis cylindricis, ellipticis, lanceolatis, furcatis vel difformibus, in ramulis brevibus congestis, intus albo; stipite tenui, flexili, glabro, furcato; peritheciis globosis, atris; ostiolis prominulis, scabris; ascis cylindraceis, stipitatis; sporidiis elliptico-lanceolatis, fuscis ($.012 \times .005$ mm.).

On bark and wood. St. Helena.

Not more than half an inch or an inch high. Clubs densely crowded, about a quarter of an inch long, at the apex of a slender furcate or simple stem, which penetrates the bark or wood, so that only the cluster of small clubs is visible.

42. *Xylaria Willsii*, Berk. in *Herb.*

Carnosa, aurantio-fulva, stipitata. Clavulis simplicibus, vel furcatis, cylindraceis, obtusis ($1-1\frac{1}{2}$ in. long, $\frac{1}{8}$ incrass.); stipite lævi (1 in. long), tenui, concolore; peritheciis minimis, brunneis, (immaturis); ostiolis planis, punctiformibus; spor. n. v.

On wood. Ste Fee de Bogota.

With a great resemblance to *X. persicaria*, Schwz.

46. *Xylaria cerebriiformis*, Cooke.

Magna, suberosa, stipitata, fuliginea, stipite vix uncialis (crass. $\frac{1}{3}$ unc.), lignoso, glabra, sulcato, interdum laterali; capitulo sub-elliptico ($1\frac{1}{2} \times 1$ unc.), profunde sulcato, aliter rugoso, cerebri-formi, demum læviusculo, intus albo; peritheciis minimis, globosis, atris, confertis; ostiolis minutissimis, vix visibilibus, planis; ascis cylindraceis; sporidiis arcte lanceolatis, rectis curvulisve, brunneis, ($0.009-0.01 \times 0.0025$ mm.).

On wood (?) Endeavour River, Australia.

Perithecia and sporidia smaller than in *X. lobata*, C.; ostiola scarce visible on the surface.

50. *Xylaria Emerici*, Berk. in *Herb. Kem.*

Magna, suberosa, clavata. Stromate erecto (5-6 in. long, $1\frac{1}{2}$ in. lat.), glabro, fuligineo, ostiolis minuto, punctato, intus griseo-lilacino, demum centro cavo; stipite crasso, brevi, glabro, sursum in clavulam incrassato; peritheciis globosis, atris, nec prominulis; ascis cylindraceis, stipitatis; sporidiis lanceolatis, utrinque obtusis, rectis vel curvulis (0.02×0.008 mm.).

On the ground (?) Neilgherries, India.

54. *Xylaria regalis*, Cooke.

Suberosa, claviformis, pyriformis, vel subglobosis, simplex, obtusa, magna (3-4 in. \times 2-3 in.), atra, cum stipite brevi crasso nudo confluyente; ostiolis prominulis, subnitidis; peritheciis magnis, globosis, atris; ascis cylindraceis, stipitatis; sporidiis ellipticis, utrinque attenuatis, rectis curvulisve, fuscis (0.012×0.004 mm.).

On wood. Botanic Garden, Calcutta (Kurz).

Closely allied to *X. Poiteani*, Lev., from which it differs in its rougher exterior, and smaller sporidia.

57. *Xylaria lobata*, Cooke.

Magna, suberosa, conchiformis, sessilis, ambitu lobata, fusca, lævis, subnitida, lobis rotundatis, intus albo; peritheciis confertis, globosis, atris; ostiolis minutissimis, punctiformibus, planis; ascis cylindraceis; sporidiis arcte lanceolatis, rectis, curvulisve, brunneis (0.012×0.003 mm.).

On wood. Endeavour River, Australia.

A noble species resembling nothing hitherto described.

76. *Xylaria salmonicolor*, Berk. in Herb.

Stromate erecto, suberoso, simplici, clavato-cylindrico, supra obtuso, infra attenuato, atro-brunneo; intus rubente, salmoni color; stipite brevissimo; peritheciis globosis, minutis, numerosissimis; ostiolis planis punctiformibus; sporidiis ignotis.

On wood. Neilgherries, India.

Clubs about $1\frac{1}{2}$ in long, $\frac{1}{4}$ in. thick; stem scarcely a quarter inch.

90. *Xylaria favosa*, Berk. & Curt. in Herb. Kew.

Suberosa. Stromate erecto, atro-fusco, rugoso, pyriformi, infra in stipite brevi attenuato, intus favoso-lacunoso, fusco; peritheciis imperfectis.

On wood (?) Cuba.

$1\frac{1}{2}$ in. high, $\frac{3}{4}$ in. thick. Possibly an *Hypoxylon*, but without fruit.

107. *Xylaria ventricosa*, Berk. in Herb.

Stromate erecto, ventricoso, fusco, longitudinaliter rugosulo, apice longe acuminato, intus albo, demum cavo; stipite tenui ($\frac{3}{4}$ in.); peritheciis globosis; ostiolis inconspicuis; ascis cylindraceis; sporidiis n. v.

On wood. Java.

Perhaps merely a variety of *X. gigantea*. About three inches high. Stem $\frac{3}{4}$ in., expanding into the oblong capitule, which is some $1\frac{1}{2}$ in. long, and $\frac{3}{4}$ in. thick, terminating in a long sterile apex $\frac{3}{4}$ in. long.

114. *Xylaria fustis*, Mont. in Enum. Pl. Cubensis MSS.

Stromate erecto, sub-clavato, stipitato; supra acuminato, sterili, infra in stipite elongato, tenui, flexili, attenuato, glabro; peritheciis globosis, atris, prominulis, magnis, paucis (10-12); ascis cylindraceis, stipitatis; sporidiis ellipticis, utrinque subattenuatis, fuscis ($.012 \times .0065$ -.007 mm.).

On trunks. Cuba.

Stem $1\frac{1}{2}$ -2 in. long. Capitulum half an inch.

135. *Xylaria trachelina* (*Sphaeria*, *Cordyceps*, *trachelina*, Lev. Ann. Sci. Nat. 1860, v. 304.)

Receptaculis elongatis, rugosis, tuberculosis, apice acutis, sterilibus, fuliginosis, intus albis, pedicello longissimo, tomentoso, suffultis; peritheciis globosis, prominentibus, intus nigris; ostiolis obsoletis; ascis cylindraceis; sporidiis obtuse lanceolatis, fuscis, ($.02 \times .007$ mm.).

On trunks. New Granada.

$1-1\frac{1}{2}$ in. high, stem $\frac{1}{2}$ inch. Clubs $\frac{3}{4}$ to 1 in. long, $\frac{1}{8}$ -. $\frac{1}{2}$ inch thick.

151. *Xylaria monilifera*, Berk. in Herb. Kew.

On legumes.

Evidently the same species as *Xylaria ianthino-velutina*, Mont., and *Xylaria Apeiba*, Mont. The sporidia in all are the same. The stem is hairy, the stroma branched, terminating in sterile points.

157. **Xylaria tuberosa** (*Sphæria tuberosa*, Persoon in "Gaudichaud's Voyage," p. 180).

Clavulis elongatis, glabris, apice compressis, ramosis, basi tuberoso.

On rotten wood (?) Sandwich Isles.

"Intermediate between *X. hypoxylon* and *X. bulbosa* the radical tubercle is oval or oblong."

Specimens in Herb. Paris are sterile, except for the bulbous base, would at once be referred to *X. hypoxylon*, of which it is probably only a form.

158. **Xylaria furcellata**, Berk. in Herb.

Stromate erecto, aurantio, supra bi-vel tri-dichotomo-furcato; ramulis abbreviatis, obtusis, sub-clavatis, cinereis; stipite erecto, tenni, æquali, vel ventricoso, radicato; peritheciis ignotis.

The Neilgherries, India.

A very marked, but imperfect species, about 2 inches high, the branched apex scarce half an inch across.

159. **Xylaria xanthiceps**, Berk. in Herb.

This again is a minute corticolous species of which only conidia are developed. The small clubs are tipped with yellow.

161. **Xylaria hystrix**, Berk. in Herb.

This is merely a fasciculate, crumpled condition of some species in its young and sterile state, and cannot be described.

162. **Xylaria Carteri**, Berk. in Herb.

Globosa, stipitata, atra, nitida ($\frac{1}{4}$ - $\frac{1}{2}$ in. diam.), intus fusca.

On wood. Bombay.

This also is evidently a species of *Phylacia*, whether that genus represents any condition of *Xylaria* or not.

163. **Xylaria ramulosa**, Berk. (*Sphæria ramulosa*, Schwz.).

This has every appearance of being a species of *Phylacia*—internally it is chiefly brown, there are no perithecia, and we have seen no spores.

On bark. Surinam.

ARRANGEMENT.—It only remains for us now to subjoin an amended arrangement of the species under the same four groups as proposed originally by Fries, and adopted by Saccardo. It may not be wholly egotistical to affirm that our facilities for becoming practically acquainted with a vast number of species have been great, and from this experience we have been enabled to determine more accurately their affinities than could be done from descriptions alone. The subdivision containing species with a discoid base has not commended itself to us for adoption, since it is by no means a permanent character, varying according to the hardness or softness of the matrix. Almost all, if not all, the specimens growing on hard wood expand at the base, so as to secure a firmer attachment, whereas when the wood is soft the base is more or less penetrating. Both conditions may be observed in a good series of *Xylaria hypoxylon*.

XYLARIA.

A. XYLOGLOSSA. Club everywhere fertile, stem smooth.

a. Capitulum clavate; stem slender, elongated.

* *Simple.*

1. *Xylaria euglossa*, Fries.
2. " *australis*, Cooke.
3. " *involuta*, Klotzsch.
= *X. tabacina*, Kickx.
= *X. Telfairii*, Berk.
4. " *Wrightii*, B. & C.
5. " *Portoricensis*, Klotzsch.
6. " *hypærythra*, Mont.
7. " *Guyanensis*, Mont.
8. " *clavicularis*, Klotzsch.
9. " *gigantea*, Zipp.
10. " *olobapha*, Berk.
11. " *exalbata*, Berk.
12. " *grammica*, Mont.
= *X. ectogramma*, Berk.
13. " *melanaxis*, Ces.
14. " *rhopaloides*, Mont.
15. " *Schweinitzii*, B. & C.
16. " *leptopus*, Fr.
17. " *protea*, Fr.
18. " *complanata*, Ces.
19. " *fissilis*, Ces.
20. " *Berkeleyi*, Mont.
21. " *rhytidophlæa*, Mont.
22. " *Zealandica*, Cooke.
23. " *nigripes*, Klotzsch.
= *X. escharoidea*, Berk.
= *X. piperiformis*, Berk.
= *X. mutabilis*, Curr.
= *X. flagelliformis*, Curr.
24. " *Cubensis*, B. & C.
25. " *multifida*, Kunze.
26. " *acicularis*, Berk.
27. " *scopiformis*, Mont.
28. " *Cordovensis*, Berk.
29. " *retipes*, Lev.

** *Furcate.*

30. " *diceras*, Lev.
31. " *biceps*, Speg.
32. " *divaricata*, Fee.

- 33. *Xylaria arenicola*, W. & Curr.
- 34. " *Mellisii*, Berk.
- 35. " *Gardneri*, Berk.
- 36. " *portentosa*, Mont.
- 37. " *Scotica*, Cooke.
- 38. " *ruginosa*, Mont.
- 39. " *tortuosa*, Sow.
- 40. " *gracilis*, Klot.
- 41. " *rhizocola*, Mont.
- 42. " *Willsii*, Berk.
- 43. " *tentaculata*, Rav.

b. Capitulum subclavate ; stem thick, abbreviated or obsolete.

- 44. *Xylaria polymorpha*, Grev.
- 45. " *variabilis*, W. & Curr.
- 46. " *cerebriformis*, Cooke.
- 47. " *gomphus*, Fr.
- 48. " *papyrifera*, Fr.
- 49. " *conocephala*, B. & C.
- 50. " *Emerici*, Berk.
- 51. " *Domingensis*, Berk.
- 52. " *Titan*, Berk.
- 53. " *Poiteana*, Lev.
- 54. " *regalis*, Cooke.
- 55. " *obtusissima*, Berk.
- 56. " *turgida*, Fr.
- 57. " *lobata*, Cooke.
- 58. " *zeylanica*, Berk.
- 59. " *lingua*, Lev.
- 60. " *castorea*, Berk.
- 61. " *aenea*, Mont.
- 62. " *allantoidea*, Berk.
- 63. " *fistulosa*, Lev.
- 64. " *dealbata*, B. & C.
- 65. " *fistuca*, Berk.
- 66. " *siphonia*, Fr.
- 67. " *curta*, Fr.
- 68. " *plebeja*, Ces.
- 69. " *echinata*, Lev.
- 70. " *anisopleura*, Mont.
- 71. " *microceras*, Mont.
- 72. " *platypoda*, Lev.
- 73. " *enterogena*, Mont.
- 74. " *fulvella*, B. & C.
- 75. " *phosphorea*, Berk.
- 76. " *salmonicolor*, Berk.
- 77. " *clavulata*, Schw.
- 78. " *pumila*, Fr.

c. Capitulum subglobose.

- 79. *Xylaria piliceps*, Berk.
- 80. " *pyramidata*, B. & W.
- 81. " *marasmoides*, B. & Cooke.
- 82. " *stilboidea*, Kalch. & Cke.
- 83. " *eudonia*, B. & C.
- 84. " *obovata*, Berk.
- 85. " *tuberiformis*, Berk.
- 86. " *globosa*, Mont.
- 87. " *clavulus*, B. & C.
- 88. " *hæmorrhoidalis*, B. & Br.
- 89. " *intermedia*, Ces.
- 90. " *favosa*, Berk.

B. XYLOCORYNE. Club everywhere fertile, stem villose.

a. Capitulum clavate ; stem elongated, slender.

- 91. *Xylaria spathulata*, B. & Br.
- 92. " *longipes*, Nke.
- 93. " *hispidula*, B. & C.
- 94. " *Beccariana*, Pass.
- 95. " *fastigiata*, Fr.
- 96. " *geoglossum*, Schwz.
- 97. " *multiplex*, Kunze.
- 98. " *scruposa*, Mont.
- 99. " *polycladia*, Lev.
- 100. " *radicata*, B. & C.
- 101. " *comosa*, Mont.
- 102. " *tenuissima*, Fr.

b. Capitulum clavate, stem abbreviated.

- 103. *Xylaria corniformis*, Mont.
- 104. " *aphrodisiaca*, W. & Curr.
- 105. " *alpina*, Speg.

c. Capitulum subglobose.

- 106. *Xylaria collabens*, Mont.

C. XYLOSTYLA. Apex of club sterile, stem smooth.

a. Capitulum clavate, simple, or cristate.

- 107. *Xylaria ventricosa*, Berk.
- 108. " *Kegeliana*, Lev.
- 109. " *pallida*, Cooke.
- 110. " *graminicola*, Ger.
- 111. " *coronata*, West.
- 112. " *cristata*, Speg.
- 113. " *inaequalis*, B. & C.

- 114. *Xylaria fustis*, Mont.
- 115. „ *myosurus*, Mont.
- 116. „ *mucronata*, Schwz.
- 117. „ *phyllophila*, Ces.
- 118. „ *phyllocharis*, Mont.

b. Capituli connate or branched.

- 119. *Xylaria digitata*, Fr.
- 120. „ *grandis*, Peck.
- 121. „ *cæspitulosa*, Ces.
- 122. „ *bulbosa*, Pers.
- 123. „ *rhizomorpha*, Mont.
- 124. „ *adscendens*, Fr.
- 125. „ *fasciculata*, Speg.
- 126. „ *coccophora*, Mont.

c. Capitulum ovate or subglobose.

- 127. *Xylaria vaporaria*, Berk.
- 128. „ *thyrsus*, Berk.
- 129. „ *axifera*, Mont.

d. Stroma filiform, perithecia lax.

- 130. *Xylaria tricolor*, Fr.
- 131. „ *filiformis*, Fr.
- 132. „ *gracillima*, Mont.
- 133. „ *axillaris*, W. & Curr.
- 134. „ *furcata*, Fr.

D. XYLODACTYLA. Apex sterile, stem villose.

a. Capitulum clavate, simple.

- 135. *Xylaria trachelina*, Lev.
- 136. „ *apiculata*, Cooke.
- 137. „ *persicaria*, Schwz.
- 138. „ *carpopbila*, Fr.
- 139. „ *oxyacanthæ*, Lev.
- 140. „ *Delitschii*, Auers.
- 141. „ *eupressiformis*, Fr.
- 142. „ *massula*, Ces.

b. Capitulum furcate or divided.

- 143. *Xylaria cornu-damæ*, Schwz.
- 144. „ *Fejeensis*, Berk.
- 145. „ *hypoxylon*, Fr.
- 146. „ *Guepini*, Fr.
- 147. „ *eupeliaca*, Ces.
- 148. „ *arbuscula*, Sacc.
- 149. „ *dichotoma*, Kunze.
- 150. „ *subterranea*, Schwz.

151. *Xylaria ianthino-velutina*, Mont.
 = *X. apeibæ*, Mont.
 = *X. monilifera*, Berk.
 152. „ *Cullenia*, B. & Br.
 153. „ *flabelliformis*, Schwz.

c. *Capitulum subglobose.*

154. *Xylaria pedunculata*, Fr.
 155. „ *Tulasnei*, Nke.
 156. „ *aristata*, Mont.
 = *X. acicula*, Ces.

INCERTÆ SEDIS.

157. *Xylaria tuberosa*, Lev.
 158. „ *furcellata*, Berk.
 159. „ *xanthiceps*, Berk.
 160. „ *fulvo-lanata*, Berk.
 161. „ *hystrix*, Berk.
 162. „ *Carteri*, Berk. } = *Phylacia*.
 163. „ *ramulosa*, Schwz. }

THAMNOMYCES, *Ehr.*

It is of very little importance whether this genus is still maintained, or absorbed into *Xylaria* as a subgenus, as has been done by Saccardo. We have nothing to add to the species enumerated.

CAMILLEA, *Fr.* Sacc. Syll., p. 346.

There is an additional species in the Berkeley Herbarium, possibly without fruit, but we did not feel justified in cutting it for examination.

Camillea Javanica, *Mont. MSS.*

In external features similar to *C. cyclops*, but very much smaller. Not exceeding $\frac{1}{2}$ a line in diameter and height.

On wood. Java.

PORONIA, *Fr.* Sacc. Syll., p. 348.

Neither on this genus have we any observations to record. Unless *Poronia incrassata*, Jungh. in "Höven and Vriese Tijdskr. v. Nat. Gesch," 1840, p. 288, may be considered specifically distinct from *Poronia Edipus*.

The following genus has been referred to already in the foregoing remarks:—

RHOPALOPSIS, *Cooke.*

Densely cæspitose, capituli abbreviated, either simply and shortly stipitate, or seated on short ramuli of an intricate stroma.

a. *Stroma simple.*

1. *Rhopalopsis cænopus* (Mont.). No. 1488.
2. *Rhopalopsis aggregatum* (W. & C.). No. 1427.
3. *Rhopalopsis Angolense* (W. & C.). No. 1519.

4. *Rhopalopsis clavus* (Fr.).
5. *Rhopalopsis confusum* (B. & C.).
6. *Rhopalopsis micropus* (Berk.). No. 1491.
7. *Rhopalopsis congestum* (B. & Br.). No. 1402.

b. Stroma multipartite.

8. *Rhopalopsis cetrarioides* (W. & Curr.). No. 1489.
9. *Rhopalopsis lichenoides* (B.).
10. *Rhopalopsis Puiggarii* (Speg.). No. 1232.
11. *Rhopalopsis contracta* (Speg.). No. 1233.
12. *Rhopalopsis Kurziana* (Curr.). No. 1429.
13. *Rhopalopsis microcephala* (Mont.). No. 1256.
14. *Rhopalopsis xylarioides* (Speg.). No. 1490.

The figures on the plates (162 to 171) are all numbered to correspond with our revised arrangement. Sporidia magnified uniformly about 380 diam. These plates will follow in successive numbers of "Grevillea."

ADDITIONS TO THE LICHEN-FLORA OF GREAT BRITAIN.

Beyond the list of lichens new to Great Britain, since the publication of "Leighton's Lichen-Flora," 1879, given us by the Rev. J. M. Crombie, in the "Journal of Botany," Sept., 1882, I beg to record the following, most of which have been examined and certified by Dr. Nylander:—

Sirosiphon ocellatus (*Dillm.*), *Ktz.*

On wet rocks at the foot of Bowness Knot, Ennerdale, Cumberland, 1881.

Lecanora citrina, *Hjfm.*

Great Orme's Head, 1881, J. E. Griffith.

Lecanora subradiosa, *Nyl.*

On walls, East Allendale, Northumberland, 1881.

Lecanora galactina, *Ach.* Forma *ferrocinetina*.

On slaty rocks, Lamplugh, Cumberland, 1881. Thallus thin, scattered, verrucose, ferruginous.

Lecidea enterochlora, *Tayl.* Forma *tuberculata*.

On rocks, St. Bees, Cumberland, 1880. Thallus rimulosa, or verrucoso-diffract. Apothecia more or less confluent, convex, im-marginate, tuberculose.

Lecidea Bouteillei, *Desmaz.* Forma *rubicata* (Cro.), *Nyl.*

On *Ulex Europæus*, by the roadside between Seascale and Gosforth, Cumberland, 1881.

Lecidea plumbina (*Anzi.*), *Nyl.*

Parasitic on the thallus of *Pannaria plumbina*, (Lightf.) Bor-rowdale roadside, Keswick, Cumberland, 1881.

W. JOHNSON.

RE-APPEARANCE OF CYCLODERMA.

BY M. C. COOKE.

In the seventh volume of "Linnaea," now fifty years ago, Klotzsch described two genera of Fungi, both of which appear to have been unknown to, and puzzled mycologists down to the present day. The first of these was *Testicularia*, of which the original specimens, with the name in Klotzsch's own handwriting, are still extant in the Royal Herbarium at Kew. Whilst looking over a set of Ellis's North American Fungi (exsiccati) we found there a species called by Peck *Milleria herbatica*, corresponding so exactly to the figure and diagnosis by Klotzsch that it seems scarcely pardonable that these should have been overlooked, and a new genus and species constructed. But so it is; *Milleria herbatica*, Peck, is no other than *Testicularia cyperi*, Klotzsch, and both from the same locality.

The other genus is *Cycloderma*, which pertains to the Gasteromycetes. It was figured, and thus described in "Linnaea":—

"Peridium duplex, exterius coriaceum, molle, interius discretum papyraceum tenuissimum. Columella scyphiformis, centro peridii interioris adnata. Capillitium radiatum, columellam et peridium interius jungens, sporis minutis, nudis inspersum. Radiculosum, stipite nullo."

Then follows the species *Cycloderma Indicum*, from the West Indies.

Down to the present time, no mycologist seems to have met with a fungus, related to *Lycoperdon* and *Scleroderma*, which corresponded to the above description,* and the genus itself began to be regarded almost with doubt.

Very recently we received from our correspondent, A. P. Morgan, of Ohio, a Gasteromycete which had puzzled our transatlantic friends, and at once we recognised in it the long lost *Cycloderma*, by the distinct columella and the radiating capillitium. This, however, is not the precise species described by Klotzsch, but closely allied to it. Externally it resembles some such a *Lycoperdon* as *L. pyriforme*, but is firmer to the touch, and smooth. There is no appearance of somewhat obscure scales, as in *C. indicum*, and the apex, instead of being depressed, is obtusely papillate, or umbonate. It may be thus described:—

***Cycloderma Ohiensis*, Cke. & Morg.**

Subglobosum, album, laeve. Peridium glabrum, coriaceum, superne umbonatum, inferne radicoso-fibrosum. Columella sub-

* Unless the species named by Montague, *Cycloderma Weddellii*, can be excepted.

cylindrica, æqualis, capillitioque radiante alba. Sporis minutissimis, globosis hyalinis.

On the ground.

Ohio, U.S.

About an inch in diameter, or less, columella two-thirds the height of the peridium, wholly white within.

The double peridium is very distinct, especially as the individual advances in age. The outer peridium is composed of rather coarse, irregular, contorted fibres, closely interwoven. The capillitium is an exceedingly delicate membrane, much folded, and plicate. The spores are globose, hyaline, and very minute. We cannot say how the spores escape, whether by rupture of the apex, since the specimens are not old enough to determine, nor yet if they acquire colour when more mature. These are points to be determined hereafter. They were found growing several together on the bare ground.

The re-discovery of this old genus is to us of far more interest than a score of new genera of the modern Padovian type, and, in conjunction with *Testicularia*, attests the accuracy of Klotzsch's observations, which were not always so fortunate with *Phanero-gamia*.

For comparison we give a copy of his sketch of the original species on which the genus was founded.

- PLATE 160. Figs. 1-2.—*Cycloderma indicum*, after figures by Klotzsch.
 Fig. 3.—*Cycloderma Ohiensis*, natural size.
 Fig. 4.—Section.
 Fig. 5.—Portion of section showing double peridium.
 Fig. 6.—Capillitium and spores $\times 400$.
 Fig. 7.—Portion of capillitium denuded of spores $\times 400$.
 Fig. 8.—Spores $\times 400$.
 Fig. 9.—Threads of outer peridium $\times 400$.
 Fig. 10.—Individual with young specimens at the base.

DOTHIDEA FROM LAKE NYASSA.

The following foliicolous *Dothidea*, collected by Thomson, has not yet been described:—

***Dothidea Pentanisiæ*, Cooke.** Amphigena. Maculis suborbicularibus (1 cm.), brunneis. Peritheciis convexis, atris, nitidis, subrugosis, in maculas congestis. Ascis elliptico-clavatis, latis. Sporidiis ellipticis, uniseptatis, medio constrictis, loculo inferiore tenuiore, fuliginosis ($0.18-0.2 \times 0.06$ mm.).

On leaves of *Pentanisia*? Lake Nyassa. (Thomson.)

AUSTRALIAN FUNGI.

BY M. C. COOKE. (*Continued from p. 65.*)

ÆCIDIOMYCETES.

ORD. I. PUCCINIÆI.

Gen. 1. RÆSTELIA, *Rebent.***Ræstelia polita**, *Berk. Linn. Journ.* XIII., 174.On *Muhlenbeckia Cunninghamii*. Victoria.Gen. 2. ÆCIDIUM. *Pers.***Æcidium Ranunculacearum**, *DC. Berk. Linn. Journ.* XIII., 173.On *Ranunculus*. Tasmania, Port Philip, Victoria, Falkland Islands.**Æcidium Goodeniacearum**, *Berk. Linn. Journ.* XIII., 173.On *Selliera*. S. Australia, Victoria.**Æcidium Lobeliæ**, *Thum.* } *vide Puccinia.***Æcidium microstomum**, *Berk.* } *aucta Müll.***Æcidium Senecionis**, *Desm. Ann. Sci. Nat.*, 1836, vi., 244.(*Æcidium compositarum*, *DC.*, var. *Senecionis*.)On *Senecio*. Victoria.**Æcidium apocynatum**, *Schwz. Berk. in Linn. Trans. Ser. 2, vol. 1,*
p. 407.On *Tabernemontana*. Queensland.**Æcidium soleniiforme**, *Berk. in Fl. Tasm.* II., p. 270.On *Goodia latifolia*. Tasmania.**Æcidium cystoseiroides**, *Berk. in Fl. Tasm.* II., p. 270.On *Opercularia*. Tasmania.**Æcidium veronicæ**, *Berk. in Herb. No. 5202.*

Sparsum, semi-immersum, fimbriato-marginatum.

On *Veronica*. Australia (Müller).

Specimens are old and discoloured, and the spores are dispersed.

Æcidium cymbonoti, *Thum. in Müll. Supp. Phyt. Austr.*, p. 96.

Victoria. (No reference given to diagnosis.)

Æcidium callixenis, *Berk. in Herb. No. 5163.*On *Callixene marginata*. Falkland Islands.Gen. 3. CRONARTIUM. *Fr.***Cronartium asclepiadeum**, *Fries. Obs. I.*, 220.On *Jacksonia scoparia*. Queensland.Gen. 4. PUCCINIA. *Pers.***Puccinia malvacearum**, *Mont. Fl. Club.* VIII., 43.On *Malva rotundifolia*, and *Athæa rosea*. Victoria.**Puccinia Dichondræ**, *Berk. Linn. Journ.* XIII., 173.

Victoria.

Puccinia prunorum, *Link. Sp.* II., 82.

Victoria.

Puccinia aucta, Müll. Linn. Journ. xiii., 173.

I. *Æcidium microstomum*, Berk. Linn. Journ. xiii., 173.

On *Lobelia pedunculata*.

Æcidium Lobeliae, Thum. Grev iv, 75. (Victoria.)

II. *Uredo Lobeliae*, Thum. (Victoria.)

III. *Puccinia aucta*. Müll. l. c.

On *Lobelia anceps*. S. Australia, Victoria.

Puccinia Chondrillæ, Corda. Icon. iv., f. 46.

II. *Uredo cichoracearum*. DC.

III. *Puccinia chondrillæ*. Corda.

S. Australia, Victoria, N. S. Wales.

Puccinia graminis, Pers. Disp. Fung., 39.

II. *Uredo linearis*. Pers.

III. *Puccinia graminis*. Pers.

On grasses. S. Australia, Victoria, N. S. Wales, Queensland.

Puccinia straminis, DeBary Ann. Sci. Nat., 1866.

II. *Uredo rubigo-vera*. DC.

III. *Puccinia straminis*. Fekl.

On grasses. S. Australia, Victoria, N. S. Wales.

Gen. 5. UROMYCES. Lev.

Uromyces Betæ, Kuhn. in Bot Zeit., 1869, No. 450.

II. *Uredo Betæ*. Pers. syn.

On beet leaves. Victoria.

Uromyces puccinioides, Berk. & Müll. Linn. Journ. xiii., 173.

I. *Æcidium Goodeniacearum*, B. (?).

III. *Uromyces puccinioides*. Berk. l. c.

On *Goodenia*. S. Australia.

Gen. 6. MELAMPSORA. Cast.

Melampsora Lini, Tul. Ann. Sci. Nat., 1854, ii.

On *Linum*. S. Australia, Victoria, N. S. Wales.

Melampsora phyllodiorum, B. & Br.

Queensland.

Gen. 7. UREDO. Pers.

Uredo restionum (Nees), Müll. Supp. Phyt. Austr., p. 96.

W. Australia.

We have no knowledge of this species.

Uredo angiosperma, Thüm. in Müll. Supp. Phyt. Austr., p. 96.

W. Australia. (No reference to diagnosis.)

Uredo Maydis, DC. Fl. Fr. vi., 77. Müll. in Supp. Phyt. Austr., p. 96.

Queensland.

This is an *Ustilago*, if the species of De Candolle, but we have no knowledge of Australian specimens.

Uredo antarctica, Berk. Crypt. Antarct., p. 58.

On *Luzula*. Campbell Islands.

Gen. 8. CYSTOPUS. Lev.

Cystopus candidus, Lev. in Orb. Dict. xii., 787.

On *Cruciferae*. Victoria.

ORD. II. **USTILAGINEI**, *Tul.*

Gen. 1. **USTILAGO**. *Lamk.*

Ustilago carbo, *Tul. Mem. Ustil.*, p. 78 (*U. segetum*, *Ditm.*).
Queensland.

Ustilago marmorata, *Berk. Linn. Journ.* XIII., 174.
Mt. Gambier, S. Australia, Victoria.

Ustilago axicola, *Berk. Ann. Nat. Hist.* 1852, No. 55.
Queensland.

Ustilago Candollei, var. **Berkeleyana**, *Tul. Mem. Ustil.*, p. 94.
Australia.

Ustilago pilulæformis, *Berk. Hook. Journ. Bot.* II., 523.
Victoria.

Ustilago Muelleriana, *Thum. Myc. Univ.*, No. 623.
Victoria.

Ustilago bullata, *Berk. Fl. N. Zeal.* II., 196, t. 106, f. 12.
River Murray, S. Australia, Victoria, N. S. Wales.

Ustilago bromivora, *Waldh. Ustilag.*, p. 215.
E. Australia, Murray River, S. Australia, Victoria, N. S. Wales.

Ustilago utriculosa, *Tul. Mem. sur les Ust.*, p. 102.
Gipps Land, River Tambo.

Gen. 2. **SOROSPORIUM**. *Rud.*

Sorosporium eriachnis, *Thum. Müll. Supp. Phyt. Austr.*, p. 97.
Queensland.

Sorosporium Muelleri, *Thum. Müll. Supp. Phyt. Austr.*, p. 97.
Victoria.

We have no reference to diagnoses of these species, which are unknown to us.

Gen. 3. **THECAPHORA**. *Fing.*

Thecaphora globuligera, *B. & Br. Linn. Trans.*, 1879.
Queensland.

Thecaphora leptocarpi, *Berk. Linn. Journ.* XVIII., 388.
On *Leptocarpus tenax*. Wilson's Promontory.

Gen. 4. **UROCYSTIS**. *Rabh.*

Urocystis solida (*Berk.*). *Waldh. Ustilag.*, p. 236.
Tasmania.

Gen. 5. **TILLETIA**. *Tul.*

Tilletia caries, *Tul. Mem. Ustil.*, p. 113.
S. Australia, Victoria, Tasmania, N. S. Wales, Queensland.

DISCOMYCETES.

ORD. I. **HELVELLACEI**, *Fr.*

Gen. 1. **MORCHELLA**. *Dill.*

Morchella conica (*Pers.*), *Cooke, Myco.*, t. 81, f. 315.

Victoria, Tasmania, Grampians, Upper Murray River, Macquarrie River.

Morchella semilibera (DC.), Cooke, *Myco.*, t. 85, f. 321.
Victoria, N. S. Wales.

Gen. 2. **HELVELLA**. Fr.

Helvella monachella, Fr. *Sys. Myc.* II., 18.
Tasmania.

Gen. 3. **LEOTIA**. Fr.

Leotia lubrica (Pers.), Cooke, *Myco.*, t. 44, f. 171.
Victoria, Tasmania.

Gen. 4. **MITRULA**. Fr.

Mitrula vinosa (Berk.), Cke. *Myco.*, t. 46, f. 181.
Tasmania.

Gen. 5. **GEOGLOSSUM**. Pers.

Geoglossum Muelleri, Berk. Cke. *Myco.*, t. 1, f. 2.
Australia.

Geoglossum Walteri, Berk. Cke. *Myco.*, t. 1, f. 4.
Victoria.

Geoglossum hirsutum, Pers. Cke. *Myco.*, t. 1, f. 3.
Victoria.

Geoglossum glabrum, Pers. Cke. *Myco.*, t. 3, f. 1.
Victoria, Queensland.

Geoglossum Peckianum, Cke. *Myco.*, t. 2, f. 5.
Australia.

Gen. 6. **PEZIZA**. Dill.

Sub-gen. 1. **ACETABULA**. Fr.

Peziza cinereo-nigra, B. & Br. *Linn. Trans. Ser. 2, vol. 1, p. 401, t. 46,*
f. 16-18.
Queensland.

Sub-gen. 2. **TARZETTA**. Cke.

Peziza alutæcolor, Berk. Cooke, *Myco.*, t. 50, f. 198.
N. S. Wales.

Sub-gen. 3. **TRICHOSCYPHA**. Cke.

Peziza tricholoma, Mont. Cke. *Myco.*, t. 51, f. 202.
Daintree River.

Sub-gen. 4. **OTIDEA**. Fckl.

Peziza hirneoloides, Berk. Cke. *Myco.*, t. 56, f. 220.
Victoria.

Sub-gen. 5. **COCHLEARIA**. Cke.

Peziza aurantia, Vahl. Cke. *Myco.*, t. 52, f. 203.
Victoria, Tasmania, Richmond River.

Peziza cochleata, Bull. Cke. *Myco.*, t. 54, f. 212.
S. Australia, Victoria, Tasmania.

Peziza Drummondi, Berk. Cke. *Myco.*, t. 56, f. 219.
W. Australia.

Peziza badia, Pers. *Cke. Myco.*, t. 57, f. 226.

S. W. Australia.

Sub.-gen. 6. DISCINA. *Fr.*

Peziza repanda, Wahl. *Cke. Myco.*, t. 62, f. 240.

Victoria, N. S. Wales.

Peziza lumbricalis, *Cke. Grevillea*, VIII., 61.

Victoria.

Sub.-gen. 7. GEOSCYPHA. *Cke.*

Peziza Thozetii, Berk. *Linn. Journ.*, XVIII., p. 388.

Queensland.

Peziza vinoso-brunnea, B. & Br. *Linn. Trans. Ser. 2, vol. 1. p. 404,*
t. 45, f. 11-13.

Queensland.

Peziza recurva, Berk. *Cke. Myco.*, t. 108.

Tasmania.

Sub.-gen. 8. PYRONEMA. *Car.*

Peziza melaloma, A. & S. *Cke. Myco.*, t. 17, f. 67.

W. Australia.

Sub.-gen. 9. HUMARIA. *Fr.*

Peziza Mulleri, Berk. *Cke. Myco.*, t. 7, f. 26.

Tasmania.

Peziza rutilans, *Fr. Cke. Myco.*, t. 15, f. 57.

W. Australia, S. Australia.

Peziza fusispora, Berk. *Cke. Myco.*, t. 8, f. 32.

Tasmania.

Peziza carbonigena, Berk. *Cke. Myco.*, t. 8, f. 29.

Tasmania.

Peziza Archeri, Berk. *Fl. Tasm.* II., 274.

Tasmania.

Peziza scatigena, B. & C. *Cke. Myco.*, t. 18, f. 72.

Queensland.

Sub.-gen. 10. SARCOSCYPHA. *Fr.*

Peziza bulbosa, Hedw. *Cooke, Myco.*, t. 48, f. 189.

Victoria.

Peziza coccinea, Jacq. *Cke. Myco.*, t. 25, f. 95.

Tasmania.

Peziza splendens, *Quelet. Cke. Myco.*, t. 112, f. 400.

S. W. Australia.

Sub.-gen. 11. SCUTELLINIA. *Cke.*

Peziza scutellata, Linn. *Cke. Myco.*, t. 34, f. 131.

W. Australia, Victoria, Tasmania, N. S. Wales, Queensland.

Peziza margaritacea, Berk. *Cke. Myco.*, t. 34, f. 132.

Australia.

Peziza Dalmeniensis, *Cke. Myco.*, t. 39, f. 153.

Victoria.

Peziza stercorea, *Pers. Cke. Myco.*, t. 38, f. 147.
Tasmania.

Sub.-gen. 12. **DASYSCYPHA.** *Fr.*

Peziza glabrescens, *Cke. & Phil. Grev.* VIII., 62.
On *Rhipogonum*. Melbourne.

Peziza lanariceps, *Cke. & Phil. Grev.* VIII., 62.
On *Rhipogonum*. Melbourne.

Peziza virginea, *Batsch. Elench.*, p. 125.
Tasmania.

Peziza lachnoderma, *Berk. Fl. Tasm.* II., 274.
Tasmania.

Peziza hyalina, *Pers. Syn.*, p. 655.
Tasmania.

Peziza epitaphra, *Berk. Fl. Tasm.* II., 275.
On fallen leaves. Tasmania.

Peziza arachnoidea, *Berk. Fl. Tasm.* II., 275.
On dead wood. Tasmania.

Sub.-gen. 13. **HYMENOSCYPHA.** *Fr.*

Peziza firma, *Pers. Syn.*, p. 658.
Tasmania.

Peziza eucalypti, *Berk. Fl. Tasm.* II., 274, t. 183, f. 13.
Tasmania.

Peziza ceratina, *Berk. Fl. Tasm.* II., 275.
Tasmania.

Sub.-gen. 14. **MOLLISIA.** *Fr.*

Peziza cinerea, *Batsch. Cont.* 1, p. 196, f. 137.
Tasmania.

Sub.-gen. 15. **PATELLEA.** *Fr.*

Peziza Adamsoni, *Berk. Linn. Journ.* XIII., p. 176.
Victoria.

Gen. 7. **HELOTIUM.** *Fr.*

Helotium Berggreni, *Cke. & Phil. Grev.* VIII., 63.
Victoria.

Helotium citrinum, *Hedw. Musc.* II., p. 28.
Tasmania.

Helotium nigripes, *Fr. Sys. Myc.* II., 132.
Tasmania.

Helotium pateræforme, *Berk. Fl. Tasm.* II., 276.
Tasmania.

Helotium claroflavum, *Grev. Fl. Ed.*, p. 424.
Victoria.

Helotium byssigenum, *Berk. Fl. Tasm.* II., 275.
On dead sticks. Tasmania.

Helotium gratum, Berk. *Fl. Tasm.* II., 275.

On dead wood.

Helotium terrestre, B. & Br. *Proc. Linn. Soc. N. S. W.*, 1880, p. 89.*
Queensland.

Gen. 8. **CHLOROSPENIUM**. Tul.

Chlorosplenium æruginosum, Tul. *Fung. Carp.* III., 187.
Victoria, Queensland.

Chlorosplenium omniverens, Berk. *Fl. Tasm.* II., p. 275.
Tasmania.

Gen. 9. **PHILLIPSIA**. Berk.

Phillipsia subpurpurea, B. & Br. *Proc. Linn. Soc. N. S. W.*, 1880, p. 88.
Queensland.

Phillipsia polyporoides, Berk. *Linn. Journ.* XVIII., 386.

ORD. II. **BULGARIACEI**. Fr.

Gen. 1. **CYTTARIA**. Berk.

Cyttaria Gunnii, Berk. *Hook. Lond. Journ.*, 1848, 576.
Tasmania.

Gen. 2. **ASCOBOLUS**. Pers.

Ascobolus furfuraceus, Pers. *Syn.*, p. 672.
On dung. W. Australia.

Ascobolus Archeri, Berk. *Fl. Tasm.* II., 276.
On charcoal. Tasmania.

Ascobolus australis, Berk. *Linn. Journ.* XVIII., 389.
Rockhampton.

Gen. 3. **BULGARIA**. Fr.

Bulgaria sarcoides, Fr. *Sys. Myc.* II., p. 168.
Victoria, Tasmania.

Gen. 4. **OMBROPHILA**. Fr.

Ombrophila violacea, Fr. *Sum. Veg. Scan.*, p. 357.
Victoria.

ORD. III. **PATELLARIACEI**. Fr.

Gen. 1. **PATELLARIA**. Fr.

Patellaria Tasmanica, Berk. *Fl. Tasm.* II., 276.
On dead wood. Tasmania.

Gen. 2. **CENANGIUM**. Fr.

Cenangium lichenoides B. & Br. *Linn. Trans. Ser. 2, vol. I, p. 404,*
t. 45, f. 9.
Queensland.

* A number of names are recorded in this Journal, but without diagnoses, and therefore absolutely useless.

Gen. 3. URNULA. *Fr.*

Urnula rhytidea (*Berk.*), *Fl. N. Zeal.* II., 200, t. 105, f. 6.
Richmond River.

ORD. IV. **STICTIEI.** *Fr.*

Gen. 1. STICTIS. *Pers.*

Stictis radiata, *Pers. Obs.* II., 73.
Tasmania.

ORD. V. **HYSTERIACEI.** *Fr.*

Gen. 1. HYSTERIUM. *Tode.*

Hysterium elongatum, *Wahl. Flor. Lapp.*, p. 528.
W. Australia.

Hysterium tardum, *Berk. Fl. Tasm.* II., 281.
Tasmania.

Hysterium pulicare, *Pers. Syn.*, p. 98.
Clarence River.

Gen. 2. GLONIUM. *Mühl.*

Glonium stellatum, *Mühl. Cat. Am.*, 101.
Tasmania.

ORD. VI. **TUBERACEI.** *Fr.*

Gen. 1. MYLITTA. *Fr.*

Mylitta australis, *Berk. Ann. Nat. Hist.* III., 325.
Victoria, Tasmania, N. S. Wales, Queensland.

Mylitta pseudacaciæ, *Berk.*
Tasmania.

NOTES ON VAUCHERIA.

The structure and development of *Vaucheria* has been so often and so well studied and illustrated that the observation of any new features is quite unexpected, and will probably encounter some opposition, or at least excite some doubt. One of the generally accepted conclusions is, that the threads of *Vaucheria* are continuous throughout their length, only presenting septa at the time of reproduction when the short branchlets are isolated for that purpose. At all events, successive septation of the main filament does not appear to have been recognised by any one who has written upon this family. Of its development it is stated that "the lower part of the germ cell grows out into a branched, pale-coloured root, and the upper part is elongated in a still more considerable degree into a stem-like filament, which grows on and on by apical development until its growth is finally arrested by fruc-

tification." That is, in effect, the recognition of *Vaucheria* as unicellular.

During the keen weather at the commencement of the present winter, Mr. Frederic Bates of Leicester collected some filaments of *Vaucheria* from under the ice, and upon submitting them to the microscope discovered that the main threads were much divided by septa. He sent me portions of these threads mounted, and as there was no positive evidence of the filaments belonging to *Vaucheria*, at once I was prompted to reject his conclusion, and affirm that some filaments of *Cladophora* must have been mixed with the *Vaucheria*, for not only were the threads distinctly septate, but there was an accumulation of plasma in the cells, and an appearance as of differentiation. Subsequently, however, all doubts were removed, for I obtained a part of the gathering, and saw the oogonia and antheridia so characteristic of *Vaucheria* seated on filaments which, at a short distance, were septate in a similar manner to the previously examined thread. The whole gathering showed a great preponderance of septate filaments, divided completely, and somewhat constricted at the joints, some of the cells being two, and others three times, or more the diameter, in length, filaments which did not bear oogonia, or only one or two, being most divided. Approaching the subject with a strong feeling adverse to the production of veritable septa, every precaution was taken, I think, to prevent any misinterpretation, and I was compelled against my first impression to accept the fact that the filaments of this undoubted *Vaucheria* had become divided off into cells at the period of fructification.

The appearance of these cells in some sense differed from continuous threads, in that the plasma was collected towards one end, or the centre of the cells, and in many instances was dense, apparently mingled with oval bodies as if undergoing, or had undergone, differentiation. It must be stated that the filaments were very much coated with small *Diatomaceæ* and other minute *Algæ*, so that the view was obstructed.

The question which at once suggested itself was—as to the object of this septation. And here it may be suggested that the single asexual zoospore, produced in small numbers, and the single oospore produced in the oogonium, always has appeared to be a very sparse provision for the reproduction of the species, as compared with the large number of zoogonidia which are produced in every fertile cell of *Cladophora* and *Chetomorpha*. Even in the *Botrydiaceæ* the multiplex modes of reproduction are strongly in contrast with what has been known as the reproductive process in *Vaucheria*. For these reasons there does not appear to be any improbability in the supposition that zoogonidia may be produced in *Vaucheria*, in cells divided off for that purpose. The formation of the cells, the accumulation of the cytoplasm, acquiring density and, as I strongly believe, differentiation, lend strength to the probability that reproduction by zoogonidia may

yet be discovered in *Vaucheria*. We failed, both Mr. Bates and myself, to detect any active zoogonidia, but we have both seen bodies of a definite form, resembling zoogonidia at rest, in the cells; and in the water in which the gathering was kept were found similar bodies outside the threads, some in a state of germination, as shown on our plate. It must not be supposed that we affirm, or have direct evidence to affirm, either that zoogonidia are produced in the cells, or that the free germinating bodies are escaped zoogonidia, but these circumstances are mentioned as showing how necessary it is that *Vaucheria* should again become the subject of investigation, for the purpose of discovering, beyond doubt, what is the cause and true interpretation of this unsuspected septation of the filament.

M. C. COOKE.

PLATE 161. Fig. 1.—Portion of filament of *Vaucheria* bearing oogonia and antheridium.

Figs. 2, 3, 4.—Portions of filaments divided into cells by transverse septa, the contents accumulated, and undergoing differentiation at *a*, *a*.

Figs. 5-6.—Cells from the water in which the *Vaucheria* was kept, in process of germination.

NOTE.—The septation above described differs materially from that detailed by Stahl in "Bot. Zeit.," 28 Feb., 1879, called by him the *Gongrosira* form, from its apparent identity with the *Gongrosira dichotoma*, Kutz.

NORTH AMERICAN FUNGI.

By M. C. COOKE.

Polyporus (Anodermei) leucospongia, Cke. & Hark.

Albus; pileo spongioso, mollissimo pulvinato, gibbo, margine tenui, incurvo; poris subangulatis, æqualibus ($\frac{1}{3}$ – $\frac{1}{2}$ mm. diam.), dissepimentis tenuibus, fragilibusque, albis.

On trunks. California.

Pileus 3 to 4 inches by 1 to 1½ inches; not unlike in some points *Polyporus labyrinthicus* Schwz. but spores much smaller, and not toothed or lacerated, whole substance very soft and spongy.

Hymenochæte purpurea, Cke. & Morg.

Læte purpurea, tota resupinata, spongiosa; margine pallidiore, fibroso-radiato, hymenio velutino, contexto lilacino-pallido; setis longioribus, leniter asperulis.

On bark. Ohio, U.S. (A. P. Morgan.)

This agrees with two or three species only in its spongy texture, and in the facility with which the long setæ are isolated, adherent and continuous with their pedicels. Setæ 1 to 14 mm. long, with pedicels of equal length. Its nearest ally is *Hymenochæte crassa*, Lev. More spongiose, with the setæ twice as long as in *H. scabriseta*, and of a different colour.

Hymenochæte scabriseta, Cke. in Rav. Fungi Amer., No. 717.

Resupinata, purpureo-fusca, molle, sub-spongiosa; margine tenuiore pallidiori, demum leniter libero; Hymenio velutino, lævi,

setis elongatis, clavatis, stipitatis, superne asperatis (.1 mm. long, stipite incluso).

On bark of *Myrica*. Darien, Georgia.

The seti are stipitate, as in the spongy species generally, with the stem equal in length to the scabrous head.

Cycloderma Ohlensis, Cke. & Morg., for diagnosis see *Grevillea* XI., p. 95.

Geoglossum Farlowi, Cke.

Hirsutum, nigrum, clavula elongata compressa, sicco subplicata. Ascis cylindrico-clavatis. Sporidiis inordinatis, linearibus, leniter curvulis, 3-septatis, brunneis ($07 \times .005$ mm.). Paraphysibus ut in *G. hirsuto*.

Amongst grass.

It is very much a matter of opinion whether this, and *G. Walteri* C., and *G. velutipes* Pk. should be regarded as varieties of *G. hirsutum*, or as distinct species.

Cenangium rubiginosum, Cke. in *Rav. Fungi Amer.*, No. 635.

Sparum vel gregarium, rubiginosum; cupulis erumpentibus, coriaceis, breviter stipitatis, glabris, disco pallidiore. Ascis cylindraceis. Sporidiis ellipticis, vel utrinque leniter acuminatis, hyalinis, nucleatis ($016 \times .008$ mm.).

On *Ostrya Virginica*.

Stictis strobilina, Cke. in *Rav. Fungi Amer.*, No. 636.

Sparsa, pallida, in strobilos immersa. Cupulis (1-3 mm. long), sublanceolatis, primitus marginatis, ochraceo-pallidis, siccitate cinereis. Ascis cylindrico-clavatis. Sporidiis arete ellipticis, ($008-.013 \times .004-.005$ mm.). continuis, nucleatis, hyalinis.

On scales of cones of *Pinus Australis*.

Ascomyces Quercūs, Cke.

Maculis orbicularibus, brunneis, bullatis. Ascis hypophyllis, breviter claxatis. Sporidiis minutis, numerosissimis, ellipticis, hyalinis (.005 mm. long).

On leaves of *Quercus cinerea*. S. Carolina.

Hysterium (Hysterographium) stygium, Cke.

Superficiale, sparum; peritheciis lanceolatis, atris, nitidis, glabris ($\frac{1}{2}$ -1 mm. long). Ascis clavatis. Sporidiis ellipticis, ovatisve, multiseptatis, muriformibus, fuscis ($03 \times .013$ mm.).

On bark of *Quercus*, &c.

Hysterium lineolatum, Cke.

Sparum vel gregarium, erumpens, lineolatum. Peritheciis angustis, obtusis, atris, longitudinaliter striatulis, demum subhiantibus. Ascis clavatis. Sporidiis fusoido-ellipticis, multiseptatis, muriformibus, hyalinis ($025-.035 \times .008-.015$ mm.). Paraphysibus sursum incrassatis, brunneis.

On stumps of oak. Texas, Florida, New Jersey.

Hysterium ovatum, Cke. in *Rav. Fungi Amer.*, No. 321.

Gregarum, superficiale. Peritheciis ovatis, utrinque obtusis, atris, longitudinaliter striatis, labiis arete conniventibus. Ascis subcylindraceis. Sporidiis sublanceolatis, utrinque rotundatis, $015-.018 \times .008$ mm., hyalinis, nucleatis, demum pseudo-triseptatis.

On old oak stumps.

Nectria (Calonectria) chlorinella, Cooke in *Rav. Fungi Amer.*, No. 736.

Sparsa, superficialis, globosa, citrina. Peritheciis lanato-tomentosis, papillatis, ostiolo nudo. Ascis clavatis. Sporidiis elongato-ellipticis, utrinque obtusis, rectis vel sub-curvulis, 1-3 septatis, hyalinis ($\cdot 018\text{--}\cdot 02 \times \cdot 005$ mm.).

On bark of *Ulmus Americanus*, Seaboard of S. Carolina.

Nectria rimincola, Cooke in *Rav. Fungi Amer.*, No. 644.

Gregaria, vel subsparsa, superficialis, coccinea, in rimis corticis nidulantibus; Peritheciis subglobosis, dein depressis, glabris, sub-nitidis ($\frac{1}{3}$ -mm.). Ascis cylindraceutis. Sporidiis ellipticis, uniseriatis, uniseptatis, hyalinis, nec constrictis ($\cdot 012 \times \cdot 004$ mm.).

In cracks of bark of *Liquidambar*, Seaboard of S. Carolina.

Nectria rhizogena, Cooke in *Rav. Fungi Amer.*, No. 645.

Cæspitosa, erumpens, stromatica, aurantio-rubra, demum coccinea. Peritheciis subglobosis, glabris, vix papillatis (10-12) in cæspitulis parvis erumpentibus. Ascis cylindraceutis. Sporidiis arete ellipticis, uniseptatis, hyalinis ($\cdot 008\text{--}\cdot 009 \times \cdot 003$ mm.), conidiis tubercularioideis, roseis ($\cdot 005 \times \cdot 002$ mm.).

On roots of *Ulmus*. Seaboard of S. Carolina.

Clusters, 1 mm. diam.; perithecia, $\frac{1}{6}$ mm. diam.

Nectria fimeti, Cooke in *Rav. Fungi Amer.*, No. 646.

Gregaria, vel subsparsa, aureofulva. Peritheciis subglobosis, in stromate byssoideo aureo nidulantibus, superne nudis, glabris, inferne tomentosis. Ascis cylindraceutis. Sporidiis ellipticis, continuis ($\cdot 015 \times \cdot 008$ mm.) hyalinis.

On cow dung. Aiken, S. Carolina.

Dothidea Tamaricis, Cke. in *Rav. Fungi Amer.*, No. 668.

Erumpens. Pustulis atris, truncatis, suborbicularibus, cellulis (4-8) in stromate immersis; Ascis clavatis. Sporidiis inordinatis, elliptico-lanceolatis, hyalinis, continuis ($\cdot 018 \times \cdot 005$ mm.).

On branches of *Tamarix*. Aiken, S. Carolina.

Dothidea Baccharidis, Cke. in *Rav. Fungi Amer.*, No. 738.

Erumpens. Pustulis atris, depressis, ovatis ellipticisve, cellulis in stromate immersis. Ascis clavatis. Sporidiis subellipticis uniseptatis, fuscis, loculo inferiori multo minori ($\cdot 02 \times \cdot 012$ mm.).

On branches of *Baccharis*. Seaboard of S. Carolina.

Melogramma (Botryosphaeria) ficus, Cke. in *Rav. Fungi Amer.*, No. 797.

Erumpens. Peritheciis minimis, obtusis, atris, opacis, in cæspitulis lineasque erumpentibus. Ascis clavatis. Sporidiis elliptico-lanceolatis, continuis, hyalinis ($\cdot 025 \times \cdot 01$ mm.).

On bark of *Ficus carica*. Aiken, S. Carolina.

Melogramma Callicarpæ, Cke. in *Rav. Fungi Amer.*, No. 767.

This is in too imperfect a condition for diagnosis.

Diatrype Azedarachtæ, Cke. in *Rav. Fungi Amer.*, No. 744.

Erumpens. Stroma atra, convexa, suborbicularis, intus concolor. Peritheciis compressis. Ascis clavatis. Sporidiis allantoideis, pallido-fuscis ($\cdot 012 \times \cdot 003$ mm.).

On branches of *Melia*. Seaboard of S. Carolina.

Valsa atomæspora, Cke. in *Rav. Fungi Amer.*, No. 660.

Immersa. Peritheciis (4-6) subglobosis, atris, in ligno immersis, ostiolis elongatis, convergentibus, erumpentibus. Ascis minutis ($.015 \times .005$ mm.), clavato-lanceolatis. Sporidiis allantoideis, minutissimis (vix $.0025$ mm. long. superantibus) hyalinis.

On *Cornus*. Seaboard of S. Carolina.

The fruit is the most minute of any species with which we are acquainted.

Valsa niphoclina, Cke. in *Rav. Fungi Amer.*, No. 748.

Lineato-erumpens. Peritheciis ovatis, in stromate niveo nidulantibus, ostiolis brevibus, convergentibus, sulcatis, in lineas transversas erumpentibus. Ascis cylindrico-clavatis. Sporidiis allantoideis, hyalinis ($.008 \times .002$).

On bark of *Betula nigra*. Florence, S. Carolina.

Valsa tecta, Cke. in *Rav. Fungi Amer.*, No. 747.

Tecta, inconspicua. Peritheciis circinatis, paucis, in corticem nidulantibus, ostiolis minimis, brevibus. Ascis clavatis. Sporidiis inordinatis, sublanceolatis, quadri-nucleatis, demum uniseptatis, hyalinis ($.018 \times .005$ mm.).

On bark of *Myrica*. Darien, Georgia.

This has nothing of the habit of a *Diaporthe*, as we comprehend that genus.

Byssosphæria corynephora, Cke.

Effusa, aterrima. Hyphis repentibus, septatis, ramulosis, ramulis assurgentibus, conidiis clavatis, infra longe attenuatis, fuscis, multi-septatis (9-11) superne truncatis ($.15 \times .018$ mm.). Peritheciis subglobosis, depressis, superne glabris, ad basim tomentoso intertextis. Ascis cylindrico-clavatis. Sporidiis lanceolatis, continuis, hyalinis ($.02 \times .004$ mm.).

On *Ostrya Virginica*.

Sphæria ceratotheca, Cke. in *Rav. Fungi Amer.*, No. 677.

Superficialis, subiculo atro conidiifero nidulans. Peritheciis minimis, atris, opacis, hæmisphæricis; Ascis lanceolatis, sursum acute cornuto-apiculatis. Sporidiis lanceolatis, triseptatis, hyalinis, ($.025 \times .005$ mm.), conidiis pluri-septatis, muriformibus, brunneis, ($.045$ -. $.05$ mm. long).

On culms of *Zea Mays*. Aiken, S. Carolina.

Ceratostoma hystricina, Cke. in *Rav. Fungi Amer.*, No. 674.

Gregaria, subimmersa, demum emergens, subsuperficialisque. Peritheciis atrofuscis, globosis, tomentosis, rostellatis; ostiolis cylindricis, subflexuosis. Ascis cylindraceis. Sporidiis elliptico-lanceolatis, hyalinis ($.016$ -. $.018 \times .006$ mm.).

On bark of *Ficus*. Aiken, S. Carolina.

Sphæria (obtectæ) uvæsarmenti, Cke. in *Rav. Fungi Amer.*, No. 678.

Tecta, sparsa, vel subgregaria. Peritheciis globosis, atris, subprominulis. Ascis clavatis. Sporidiis lanceolatis, continuis, hyalinis, ($.04 \times .008$ mm.).

On twigs of *Vitis*. Aiken, S. Carolina.

Sphæria Baptisiæcola, Cke. in *Rav. Fungi Amer.*, No. 680.

Tecta, punctiformis, caulicola. Peritheciis tenuis, minimis, vix prominulis, tectis. Ascis clavatis. Sporidiis biserialibus, sublanco-latis, uniseptatis, hyalinis ($.015 \times .0035$ mm.).

On *Baptisia leucantha*. Aiken, S.C.

Technically, this is perhaps a *Sphærella*.

Sphæria (Follicolæ) hederæfolia, Cke. in *Rav. Fungi Amer.*, No. 683.

Follicola, gregaria. Peritheciis globosis, semi-immersis, atris. Ascis clavatis. Sporidiis elliptico-lanceolatis, vel clavatis, triseptatis, hyalinis ($.02 \times .008$ mm.).

On leaves of *Hedera helix*. Aiken, S. Carolina.

Sphærella (Læstadia) leucothöes, Cke. in *Rav. Fungi Amer.*, No. 687.

On *Leucothöe*. Pinopolis, S. Car.

See "Journal of Botany," March, 1883.

Sphærella Taxodii, Cke. *Rav. Fungi Amer.*, No. 686. *Journal of Botany*, March, 1883.

On *Taxodium distichum*. Seaboard, S. Carolina.

Sphærella cornifolia (Schwz), Cke. in *Rav. Fungi Amer.*, No. 688. *Journal of Botany*, March, 1883.

On *Cornus florida*. Aiken, S. Car.

Sphærella populifolia, Cke. *Rav. Fungi Amer.*, No. 689. *Journal of Botany*, March, 1883.

On *Populus angulatus*. Seaboard, S. Carolina.

Sphærella aquatica, Cke. *Rav. Fungi Amer.*, No. 690. *Journal of Botany*, March, 1883.

On *Quercus aquatica*. Seaboard, S. Carolina.

Sphærella Prini, Cke. in *Rav. Fungi Amer.*, No. 753. *Journal of Botany*, March, 1883.

On *Prinos glaber*. Pinopolis, S. Carolina.

Sphærella oleina, Cke. in *Rav. Fungi Amer.*, No. 754. *Journal of Botany*, March, 1883.

On *Olea*. Darien, Georgia.

Sphærella convexula (Schwz), Cke. in *Rav. Fungi Amer.*, No. 755. *Journal of Botany*, March, 1883.

On *Carya*. Aiken, S. Carolina.

Sphærella platanifolia, Cke. *Rav. Fungi Amer.*, No. 756. *Journal of Botany*, March, 1883.

On *Platanus occidentalis*. Darien, Georgia.

Sphærella Gardeniæ, Cke. in *Journal of Botany*, March, 1883.

On *Gardenia florida*. Aiken, S. Car.

Sphærella Gordoniæ, Cke. in *Journal of Botany*, March, 1883.

Sphærella Gardeniæ, Cke. in *Rav. Fungi Amer.*, No. 799.

On *Gordonia*. Darien, Georgia.

The above error in the Exsiccati should be corrected.

Sphærella lenticula, Cke. in *Rav. Fungi Amer.*, No. 800. *Journal of Botany*, March, 1883.

On *Cerasus Caroliniana*. Aiken, S. Carolina.

Sphærella minimæpuncta, Cke. in *Rav. Fungi Amer.*, No. 681. *Journal of Botany*, March, 1883.

On stems of *Gladiolus*. Aiken, S. Carolina.

- Sphærella Californica**, *Cke. in Journal of Botany, March, 1883.*
On grass. California (No. 1242).
Sphærella philochorta, *Cke. in Journal of Botany, March, 1883.*
On grasses. Maine.

ENUMERATION OF THE BRITISH CLADONIEI
(With their Arrangement, General Distribution in Great Britain
and Ireland, and Reference to British Published Exsiccati).

BY THE REV. J. M. CROMBIE, F.L.S.

GENUS I. **PYCNOTHELIA** (Ach.).

1. **P. papillaria** (Ehrh.).—Exs. Leight. 208, Mudd 22, *Clad.* 80, Cromb. 121. Not uncommon in Great Britain and Ireland.—F. *molariformis* (Hffm.). Rare in S. England.
2. **P. apoda**, *Nyl.*—Rare in W. Ireland, Galway.

GENUS II. **CLADONIA** (Hffm.).

A. **Phæocarpæ.**

a. **MACROPHYLLINÆ.**

3. **Cl. endiviæfolia** (Dcks.).—Exs. Dcks. Hort. Sic. 24. Apparently rare in S. England, and only sterile.
4. **Cl. alcicornis** (Lghft.).—Exs. Leight. 15, Mudd *Clad.* 1, Cromb. 122, Larb. *Cæsar.* 56. Not uncommon. A spadiceous state occurs at Lydd beach.—F. *gracilescens*, Cromb. "Laciniae very narrow, much divided, podetia narrow, and narrowly scyphiferous." Rare in S. Wales.
5. **Cl. firma**, *Nyl.*—Exs. Larb. *Cæsar.* 57. Rare in the Channel Islands and S. England.

b. **MICROPHILLINÆ.**

† *Scyphophoræ.*

6. **Cl. pyxidata** (L.).—Exs. Mudd *Clad.* 6. General and common.—F. *lophyra* (Ach.). Rare in S.W. England and the S.W. Highlands.—F. *epiphylla* (Ach.). Rare in E. England.
var. **symphicarpa** (Ach.).—Sparingly in S.W. England and the S.W. Highlands.
var. **pocillum** (Ach.).—Rare in Britain, and not seen from Ireland.
var. **chlorophæa**, *Flk.*—Exs. Mudd *Clad.* 7-11, Leight. 399. General and not uncommon in Britain.—F. *lepidophora*, *Flk.* Apparently rare in England and in N.E. Scotland.—F. *myriocarpa* (Coëm.).—Exs. Larb. *Cæsar.* 58. Rare in the Channel Islands, S. and W. England, and amongst the S. Grampians.
7. **Cl. leptophylla** (Ach.).—Very rare in S. England.

8. **Cl. pityrea**, *Flk.*—Exs. Mudd *Clad.* 27-29, *Larb. Cæsar.* 8. Somewhat local in England, rare in the S.W. Highlands.—*F. hololepis*, *Flk.* (not Mudd Exs. 33 *s.n.*). Rare amongst the S. Grampians.

9. **Cl. acuminata** (*Ach.*).—Very local in the Highlands of Scotland and in Galway. From this

* **Cl. Lamarckii** (*Del.*), differs chiefly in the less decided reaction with *K.* Rare in the W. Highlands.

10. **Cl. cariosa** (*Ach.*).—Exs. Mudd *Clad.* 5. Rare in Britain and S.W. Ireland.

11. **Cl. fimbriata** (*L.*), including ff. *denticulata* (*Flk.*), *costata* (*Flk.*), *pterygota* (*Flk.*).—Exs. Mudd 8, *Clad.* 14, 15, 17, 18. General and abundant.

var. **conista** (*Ach.*).—Exs. Mudd *Clad.* 13. Local and rare in S.W. and N. England, and amongst the Grampians.—*F. exigua* (*Huds.*). Very rare in E. England.

var. **tubæformis** (*Hffm.*).—Exs. Mudd 7, Leight. 377. Sparingly in England and the Highlands.—*F. macra* (*Flk.*). Exs. Mudd *Clad.* 12. Local in England, the W. Highlands and S. Ireland.

var. **carneopallida** (*Flk.*).—Very rare in E. England.

* **Cl. fibula** (*Ach.*).—The type of this has not yet apparently been gathered in Britain.

var. **abortiva** (*Flk.*).—Local in N. England and the W. Highlands.

var. **subcornuta**, *Nyl.*—Exs. Mudd *Clad.* 19-21. Pretty general in Britain and Ireland.

var. **radiata** (*Schreb.*).—Exs. Mudd *Clad.* 23, Leight. 376. Somewhat local in Britain and Ireland.—*F. nemoxya* (*Ach.*). Rare in N. England and amongst the S. Grampians.

11 bis. **Cl. gracilis** (*L.*) = *CHORDALIS*, *Flk.*—Exs. Leight. 296, Mudd 10, 11, *Clad.* 34, 37, *Larb. Lich. Hb.* 207. General and common.—*F. abortiva*, *Schær.*—Exs. Mudd *Clad.* 36. Local in N. England and the Highlands.—*F. aspera*, *Flk.*—Exs. Leight. 402. Rare in Central and N. England.

var. **hybrida**, (*Hffm.*).—Local amongst the Scottish Grampians.

* **Cl. gracillima**, *Norrl.*—Scarce in N. England and in N.E. Scotland.

12. **Cl. cornuta** (*L.*)—Rare amongst the Scottish Grampians.

13. **Cl. ochrochlora**, *Flk.*—Exs. Mudd *Clad.* 24-26. Local in England and the W. Highlands.—*F. ceratodes*, *Flk.*—Exs. Mudd *Clad.* 23. Seen only from N. England.

14. **Cl. verticillata** (*Hffm.*)—Exs. Mudd *Clad.* 3. Rather local in Britain, and rare in W. Ireland.—*F. laciniolata*, *Nyl.* “*Laciniae* elongated and narrower at the base, the scyphi laciniolose at the margins.” Rare in S.W. England and the W. Highlands.

15. **Cl. cervicornis** (*Ach.*)—Exs. Mudd 9 in pt. General and not uncommon.—*F. stipata*, *Nyl.* Local in W. England and W. Ireland.

16. **Cl. sobolifera** (*Del.*).—Exs. Leight. 14. Mudd 9 in pt., *Clad.* 2, *Larb. Lich. Hb.* 322. Somewhat local in Britain and Ireland.

17. **Cl. macrophylla** (*Schær.*).—Local amongst the Scottish Grampians.

18. **Cl. degenerans**, *Flk.*.—Extremely local and rare amongst the N. Grampians.—*F. haplotea* (*Ach.*). Local and scarce in the Highlands.—*F. granulifera*, *Cromb.* “Podetia densely verrucoso-granulose, simple or shortly branched above, obscurely scyphiferous.” Only a single specimen gathered in Braemar.

var. **anomæa** (*Ach.*).—Apparently local and scarce in E. and S. England and in S. Scotland.

var. **hypophylla**, *Nyl.*.—Exs. Mudd *Clad.* 18. As yet seen only from N. England. Since, however, the reaction is $K+$, it probably descends rather from *Cl. cervicornis*.

* **Cl. trachyna** (*Ach.*).—Very rare amongst the N. Grampians.—*F. subfurcata*, *Nyl.* Very local in Braemar.

†† *Ascyphæ.*

19. **Cl. turgida** (*Ehrh.*).—Extremely rare amongst the N. Grampians.

20. **Cl. furcata**, *Hffm.* = *SUBULATA* (*L.*).—Exs. Mudd 16 in pt., *Clad.* 50, 51. Probably general and common.—*F. exilis*, Mudd.—Exs. Mudd *Clad.* 53. Sparingly in N. England and the Highlands.—*F. spinosa* (*Huds.*). Rare in England and S. Scotland.

var. **corymbosa** (*Ach.*).—Exs. Leight. 401. Local in England, the W. Highlands, and S. W. Ireland.

* **Cl. racemosa** (*Hffm.*).—Exs. Mudd *Clad.* 46, 47. Probably general and not uncommon.—*F. recurva* (*Hffm.*).—Exs. Mudd *Clad.* 48, 49. Very local in Britain, not seen from Ireland.

** **Cl. coralloidea** (*Ach.*), *Nyl.*.—Exs. Mudd. 4. Rare in N. England.

21. **Cl. pungens** (*Ach.*).—Exs. Leight. 16, Mudd 16 in pt., *Clad.* 54, 55, *Cromb.* 123. General and common in England, rarely in Scotland and Ireland.—*F. foliosa*, *Flk.* Somewhat local in England.

* **Cl. muricata** (*Del.*).—Exs. Leight. 369. Local in S. and Central England, where a folioliferous state also occurs.

22. **Cl. crispata** (*Ach.*).—Exs. Mudd *Clad.* 45. Rare in N. England and amongst the Grampians.

* **Cl. furcatiformis**, *Nyl.*.—Exs. Mudd 12. Very local, and scarce in N. England.

23. **Cl. scabriuscula** (*Del.*).—Rare in the Channel Islands, S. W. England, and the W. Highlands.

24. **Cl. cenotea** (*Ach.*).—Apparently very rare and local in the W. Highlands. *Cl. glauca*, *Flk.* seems to be a subspecies of this. Rare in W. England.

25. **Cl. squamosa**, *Hffm.*—Exs. Mudd 13, Cromb. 124, Larb. *Cæsar*. 10 in pt. Pretty general and common in Britain and Ireland.—*F. ventricosa* (Ach., not Huds.). Rather local in England and Scotland.—*F. frondosa* (Del.). Rare in the W. Highlands.—*F. cucullata* (Del.)—Exs. Mudd 14, *Clad.* 33, 50 *fide* Nyl. Local in N. England and W. Ireland, but perhaps nothing very typical.

* **Cl. adspersa** (*Flk.*).—Nyl. Local and scarce in Britain and Ireland.

26. **Cl. subsquamosa**, *Nyl.*—Exs. Mudd 14, Larb. *Cæsar*. 10 in pt., Leight. 405. Somewhat local in Britain and Ireland.—*F. tumida* Cromb., analogous to *f. ventricosa* of *Cl. squamosa*. Rare in S. England and the W. Highlands.

27. **Cl. speciosa** (*Del.*)—Exs. Mudd *Clad.* 41 (s. n. *asperella*, *Flk.*). Extremely rare in N. England.—*F. polychonia* *Flk.*—Exs. Mudd *Clad.* 42. Extremely rare in N. England, as also apparently in other countries.

28. **Cl. cæspititia** (*Pers.*).—Exs. Mudd *Clad.* 44, Larb. *Cæsar*. 9, Leight. 368. Somewhat local in Britain and Ireland.

29. **Cl. delicata** (*Ehrh.*).—Exs. Mudd 15, *Clad.* 43, Leight. 382. Rather scarce in England and the W. Highlands.

B. **Erythrocarpæ.**

30. **Cl. coccifera** (*L.*).—Exs. Mudd 23, *Clad.* 65-67, Leight. 375, 404. General and common.

var. **asotea** (*Ach.*).—Local and scarce amongst the N. Grampians.

* **Cl. pleurota** (*Flk.*).—Very local in Britain and Ireland.

31. **Cl. bellidiflora** (*Ach.*).—Rare in W. and N. England, more frequent amongst the Grampians; doubtful in Ireland. N.B. *Cl. vestita* Leight. is nothing typical.—*F. gracilentu* (*Ach.*). Local and rare amongst the N. Grampians.

var. **Hookerii** (*Tuck.*).—Extremely rare amongst the N. Grampians.

32. **Cl. deformis** (*L.*).—Exs. Mudd 25, *Clad.* 68. Somewhat local in Britain, and not seen from Ireland.—*F. gonecha* (*Ach.*). Rare in N. England and amongst the Grampians.

33. **Cl. digitata** (*L.*).—Exs. Mudd *Clad.* 76 (*juvenilis*) *fide* Nyl. Apparently local in England and Scotland; not seen from Ireland.—*F. monstrosa* (*Ach.*). Rare in the Highlands of Scotland.

34. **Cl. macilenta** (*Ehrh.*).—Exs. Mudd 29, *Clad.* 75, Leight. 297, Larb. Lich. Hb. 283. Pretty general in Britain, rarer in Ireland.—*F. styracella* (*Ach.*). Apparently local in S. and N. England.—*F. scolecma* (*Ach.*). Rare and local in S., E. and Central England, and extremely rare with apothecia.—*F. clavata* (*Ach.*).—Exs. Mudd *Clad.* 79, Leight. 403 in pt. Local and scarce in W. and N. England, and amongst the N. Grampians.—

F. scabrosa Mudd, Exs. Mudd *Clad.* 73. Rare in S. and N. England.—*F. diminuta* Cromb. "Thallus at the base and the podetia very minute; apothecia numerous, minute, bright scarlet." Extremely rare in the W. Highlands.

var. *polydactyla* (Flk.).—Exs. Leight. 274, Mudd 27, 28, *Clad.* 77, 78. Somewhat local in Britain, rare in S. W. Ireland.

var. *carcata* (Ach.).—Exs. Mudd 23, *Clad.* 72. Local in W. and N. England, and amongst the Grampians; not certain from Ireland.

var. *ostreata*, Nyl.—Exs. Mudd *Clad.* 69, Leight. 371. Local in S., W. and N. England.

35. *Cl. bacillaris* (Ach.).—Nyl.—Exs. Mudd *Clad.* 70 (*juvenilis*) *fide* Nyl. Local and scarce in W. and N. England and amongst the Grampians.—*F. pityropoda*, Nyl. Local and scarce in the W. Highlands.

36. *Cl. Floërkeana*, Fr.—Very local and rare in the Scottish Highlands and in S. W. Ireland.—*F. trachypoda*, Nyl.—Exs. Mudd *Clad.* 71, Larb. Lich. Hb. 84. Not unfrequent in Britain and Ireland.

GENUS III. *CLADINA*, Nyl.

37. *Cl. rangiferina* (L.).—Probably general and common, but certainly less so than the following species.—*F. gigantea* (Ach.). Rare amongst the Grampians.

38. *Cl. sylvatica* (Hffm.).—Exs. Leight. 57, Mudd 19, 20, *Clad.* 37, 58, 60, Larb. Lich. Hb. 242, 243. General and abundant.—*F. lacerata* (Del.). Rare in N. E. Scotland.—*F. portentosa* (Duf.). Local in S. W. and Central England.

var. *alpestris* (L.).—Exs. Larb. Lich. Hb. 85. Rather local and scarce in Britain and Ireland.—*F. pumila* (Ach.).—Exs. Mudd *Clad.* 59. Local and rare in England and Scotland.

39. *Cl. uncialis* (L.).—Exs. Leight. 58. General and common.—*F. bolacina* (Ach.).—Exs. Mudd 17, *Clad.* 61. Rare in N. England and amongst the Grampians.—*F. adunca* (Ach.).—Exs. Mudd 21, *Clad.* 62. Probably general, and not uncommon.—*F. obtusata* (Ach.). Somewhat local in Scotland and W. Ireland.—*F. turgescens* (Fr.). Rare in S. and W. England and amongst the Grampians.

40. *Cl. amaurocræa* (Flk.).—Rare amongst the N. Grampians, and in Connemara. N.B. Var *myriocræa* (Flk.), Mudd Exs. 18, *Clad.* 63, is very doubtfully referable to this species, the specimens seen being imperfect.

* *Cl. dstricta*, Nyl.—Exs. Mudd *Clad.* 64. Local in N. England; more frequent amongst the Grampians, but always sterile.

There is no doubt that further research will add at least a few more species and varieties to the above extensive list, as our Islands are certainly very rich in Cladonias.

CLASSIFICATION OF THE UREDINES.

By C. B. FLOWRIGHT.*

The following arrangement of British species is founded upon that of Schröter, as modified and applied by Dr. Winter and the present writer.

UROMYCES, *Link.*

A. **Lepturomyces.** Teleutospores only; which germinate at once.

B. **Micruromyces.** Telentospores only, which easily fall from their stems, and germinate only after a period of rest.

U. ficariæ, Schum.; *U. ornithogali*, Wallr.; *U. scillarum*, Grev.

C. **Hemiuromyces.** Uredo and telentospores.

U. scutellatus, Schr. (*U. excavata*, DC.); *U. tuberculatus*, Fekl.; *U. rumicis*, Schum. (*U. apiculatus*; *U. bifrons*, DC.); *U. alchemillæ*, Pers. (*U. intrusa*, Ler.); *U. sparsus*, Kze. & Schm.

D. **Uromycopsis.** Æcidio—and telentospores.

U. scrophulariæ, DC. (*U. concomitans*, B. & Br.); *U. behenisi* DC.

E. **Euromyces.** Having æcidio, uredo and telentospores.

(a.) *Auteuromyces.* All three spore forms on the same host plant.

U. polygoni, Pers.; *U. betæ*, Pers.; *U. salicorniæ*, DC.; *U. limonii*, DC.; *U. valerianæ*, Schum.; *U. phaseoli*, Pers. (*U. apiculatus*); *U. orobi*, Pers. (*U. fabæ*, Pers.); *U. trifolii*, A. & S. *U. parnassiæ*, Grev.

(b.) *Hetereuromyces.* Spermogonia and æcidio-spores on one host-plant, uredo and telentospores upon another.

U. dactylidis, Oth. (*U. graminum*, Cke.); Æcidiospores on *Ranunculus acris*, *repens*, and *bulbosus*. Teleutospores on *Dactylis glomerata*.

U. poæ, Rabh. Æcidiospores on *Ranunculus ficaria*. Teleutospores on *Poa nemoralis* and *P. pratensis* (not British.)

U. junci, Desm. Æcidiospores on *Inula dysenterica*, L. Teleutospores on *Juncus obtusifolius*, Ehr.

U. pisi, Pers. Æcidiospores on *Euphorbia cyparissias*, L. (British?) Teleutospores on *Vicia cracca*, L.; *Pisum arvense*, L., *Pisum sativum*, L., *Lathyrus tuberosus*, L., *Lathyrus pratensis*, L., and *L. sylvestris*.

PUCCINIA, *Pers.*

A. **Leptopuccinia.** Having only telentospores which are firmly fixed to the host-plant, and germinate at once while still attached.

P. buxi, DC.; *P. annularis*, Str. (*P. scorodoniæ*, Lk.); *P. verrucosa*, Schultz (*P. glechomatis*, DC.); *P. veronicæ*, Schum.;

* Read before the Birmingham Natural History and Microscopical Society, 20th Feb., 1883. We are unable for lack of space to print the introductory observations.—En.

P. asteris, Duby. (*P. millefolii*, Fckl.); *P. valantiæ*, Pers. (*P. acuminata*, Fckl.); *P. chrysosplenii*, Grev.; *P. circææ*, Pers.; *P. malvacearum*, Mont.; *P. arenariæ*, Schum. (*P. lychnidis*, *P. Dianthi*, *P. moehringiæ*, &c.)

B. Micropuccinia. Having only teleutospores, which soon fall off, and germinate only after a period of rest.

P. asarina, Kunze; *P. betonicæ*, A. & S.; *P. campanulæ*, Carm.; *P. virgaureæ*, DC.; *P. ægopodii*, Schum.; *P. saxifragæ*, Schlecht; *P. rhodiolæ*, B. & Br.; *P. Fergussonii*, B. & Br. (*P. nidificans*, Magn.); *P. Thalictri*, Chev.; *P. umbilici*, Guep.

C. Hemipuccinia. Having only uredo and teleutospores.

P. Baryi, B. & Br. (*P. linearis*, Rob.); *P. phragmitis*, Schum. (*P. arundinacea*, DC.); *P. scirpi*, DC., King's Lynn; *P. oblongata*, Lk. (*P. luzulæ*, Lib.); *P. iridis*, DC. (*P. truncata*, B. & Br.); *P. polygoni*, A. & S.; *P. polygoni-amphibii*, Pers. (*P. amphibii*, Fckl.); *P. bistortæ*, Strauss; *P. oxyriæ*, Fckl.; *P. vincæ*, DC.; *P. suaveolens*, Pers. (*P. cirsii*, Lasch.); *P. bullata*, Pers. (*P. conii*, æthusæ, apii, &c.); *P. pruni-spinosæ*, Pers. *P. argentata*, Schulz (*P. nolitangeris*, Corda); *P. hydrocotyles*, Pers., Epping, Sept., 1882.

D. Pucciniopsis. Having only æcidio and teleutospores.

P. conglomerata, Strauss (*P. syngenesiarum*, Lk.; *P. senecionis*, Lib., *P. glomerata*, Grev.); *P. bunii*, DC. (*P. bulbo-castani*, Fckl.); *P. grossulariæ*, Gmel.; *P. fusca*, Relh. (*P. anemones*, Pers.); *P. smyrnii*, Corda.

E. Eupuccinia. Having æcidio, uredo, and teleutospores.

(a.) Auteupuccinia. All spore-forms on the same host-plant.

P. porri, Sow. (*Uredo alliorum*, DC.); *P. asparagi*, DC.; *P. Thesii*, Desm.; *P. soldanellæ*, DC. (?); *P. primulæ*, DC.; *P. menthæ*, Pers. (*P. clinopodii*, DC.); *P. flosculosorum*, A. & S. (*P. compositarum*, Schl.; *P. lapsanæ*, Fckl.; *P. syngenesiarum*, Corda; *P. cirsii*, Fckl.; *P. centaureæ*, DC.; *P. hieracii*, Mart.; *P. variabilis*, Grev.); *P. tragopogi*, Pers. (*P. sparsa*, Cke.); *P. tanacetii*, DC. (*P. discoidearum*, Lh.); *P. Galii*, Pers. (*P. valantiæ*, A. & S.; *P. difformis*, Kunze); *P. adoxæ*, DC.; *P. pimpinellæ*, Strauss (*P. umbellifearum*, DC.; *P. Heraclei*, Grev.; *P. angelicæ*, Fckl.; *P. chærophylli*, Purt.); *P. saniculæ*, Grev.; *P. epilobii-tetragoni*, DC. (*P. epilobii*, DC., *P. pulverulenta*, Grev.); *P. silenes*, Schrot; *P. violæ*, Schum.; *P. calthæ*, Link.

(b.) Heter eupuccinia. Spermogonia and æcidiospores upon one host-plant, uredo and teleutospores upon a different host-plant

P. graminis. Æcediospores on *Berberis vulgaris*, L. Teleutospores on wheat and various grasses.

P. rubigo-vera, DC. Æcidiospores on *Lycopsis arvensis*, L. *Echium vulgare*, L. *Symphytum officinale*, L. Teleutospores on various grasses. Var. *simplex*, Körn; on barley and various species of *Hordeum*.

P. coronata, Corda. Æcidiospores on *Rhamnus frangula*, L., and *R. catharticus*, L. Teleutospores on various grasses.

P. moliniæ, Tul. Æcidiospores on *Orchis maculata*. Teleutospores on *Molinia cærulea*.

P. poarum, Niel. Æcidiospores on *Tussilago farfara*, L. Teleutospores on *Poa annua* and *P. pratensis*, L.

P. Mugusiana, Körn. Æcidiospores on *Rumex hydrolapathum*, Huds. Teleutospores on *Phragmites communis*.

P. sessilis, Schneider. Æcidiospores on *Allium ursinum*, L. Teleutospores on *Phalaris arundinacea*, L.

P. caricis, Schum. Æcidiospores on *Urtica dioica*, L. Teleutospores on various Carices.

P. sylvatica, Schröter. Æcidiospores on *Taraxacum officinale*, W. Teleutospores on *Carex muricata*, L.

GYMNOSPORANGIUM, DC.

G. sabinae, Dicks. Æcidiospores on *Pyrus communis*. Teleutospores on *Juniperus sabina*, L.

G. clavariæforme, Jacq. Æcidiospores on *Cratægus oxyacantha*. Teleutospores on *Juniperus communis*, Lk.

G. juniperinum, Linn. Æcidiospores on *Sorbus aucuparia*, L. Teleutospores on *Juniperus communis*, L.

TRIPHRAGMIMUM, Link.

T. ulmariae, Schm.

PHRAGMIDIUM.

A. **Phragmidiopsis**. Having only æcidio and teleutospores.

P. carbonarium, Schl.

B. **Euphragmidium**. Having æcidio, uredo, and teleutospores.

P. subcorticatum, Schrank ; *P. fragariae*, DC. ; *P. rubi*, Pers., *P. violaceum*, Schultz ; *P. rubi-idæi*, Pers.

CRONARTIUM, Fries.

C. flaccidum, A. & S.

MELAMPSORA, Cart.

A. **Micromelampsora**. Only teleutospores known.

B. **Hemimelampsora**. Having uredo and teleutospores.

M. betulinae, Pers. ; *M. salicis-capreae*, Pers. ; *M. helioscopiae*, Pers. ; *M. hypericorum*, DC. ; *M. lini*, Pers. ; *M. cerastii*, Pers. ; *M. circeae*, Schum. ; *M. epilobii*, Pers. ; *M. vaccinii*, A. & S. ; *M. padi*, K. & S. (Uredo porphyrogenita, Link.).

C. **Melampsoropsis**. Having only æcidio and teleutospores, the uredospores being wanting.

M. goeppertiana, Kühn. Æcidiospores on *Pinus pinea*, L. (*Æ. columnare*, A. & S.), not British. Teleutospores on *Vaccinium vitis-idaea*, L.

D. **Eumelampsora**. Having æcidio, uredo, and teleutospores.

M. populina, Jacq. Æcidiospores on *Clematis vitalba*. Uredo and teleutospores on *Populus nigra*.

COLEOSPORIUM, *Lev.*

A. **Hemicoleosporium.** Having only uredo and teleutospores.

C. euphrasie, Schum.; *C. campanulæ*, Pers.; *C. sonchi-arvensis*, Pers.

B. **Eucoleosporium.** Having æcidio, uredo and telentospores.

C. senecionis, Pers. Æcidiospores on *Pinus sylvestris*, L. (*Peridermium pini*). Teleutospores on various species of *Senecio*.

ENDOPHYLLUM, *Lev.*

E. euphorbiæ-sylvatica, DC. (?); *E. sempervivi*, A. & S.

APPENDIX.

Isolated spore-forms of *Uredo* and *Æcidium*, the affinities of which are at present doubtful.

UREDIO. Spores borne singly on the apex of each basidium.

U. agrimonia-eupatoriæ, DC.; *U. polypodii*, Pers.; *U. phillyrææ*, Cooke; *U. quercûs*, Brond; *U. symphyti*, DC.

CÆOMA. Spores produced in chains, but without any pseudoperidium, with or without paraphyses.

C. orchidis, A. & S.; *C. mercurialis-perennis*, Pers.; *C. empetri*, Pers.; *C. euonymi*, Grev.; *C. tropæoli*, Desm., on *Tropæolum aduncum*.

ÆCIDIUM. Spores in chains, surrounded by a pseudoperidium.

Æ. ari, Desm.; *Æ. strobilum*, A. & S. (*Licea strobilina*, A. & S.); *Æ. elatinum*, A. & S.; *Æ. pedicularis*, Libosch.; *Æ. compositarum*, on *Bellis perennis*, L.; *Æ. periclymeni*, DC.; *Æ. phillyrææ*, DC.; *Æ. barbarææ*, DC.; *Æ. punctatum* (*Æ. quadrifidum*, DC.); *Æ. incarcerationum*, B. & Br.; *Æ. thalictri*, Grev.; *Æ. depauperans*, Vize (?) *Æ. dracontii* Schwz.

Of the following species I have no personal knowledge; further research is necessary in order accurately to place them in the above scheme. *Uromyces urticæ*, C.; *Puccinia fallens*, C.; *Xenodochus curtus*, C.; *Uredo plantaginis*, B. & Br.

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY
AND ITS LITERATURE.

HYPOXYLON AND ITS ALLIES.

BY M. C. COOKE.

In our last number we ventured to offer some observations on "Xylaria, and its allies," as represented in Saccardo's "Sylloge." We proceed now to make a similar series of suggestions on the remaining genera of his "Composite Phœosporæ." Before doing so we will enumerate the genera, and their distinctive characters.

USTULINA.—Stroma repando-pulvinate, thick, becoming hollow when old.

BOLINIA.—Stroma effused, solid, perithecia immersed, with rather long necks.

HYPOXYLON.—Stroma effused or subglobose, solid, perithecia innate, necks hardly any.

DALDINIA.—Stroma subglobose, concentrically zoned within, perithecia immersed, necks hardly any.

NUMMULARIA.—Stroma disc-shaped, or cup shaped, adnate, marginate.

All the above five genera are included in a section (b) which is said to have the superficial stroma carbonaceous, or coriaceous, with immersed carbonaceous perithecia.

In the previous section (a) the stroma is immersed in the matrix, and the perithecia *membranaceous*. The only genus is—

ANTHOSTOMA.—Stroma effused or limited, somewhat valsæoid.

These features will have to be borne in mind, because, if they mean anything at all, they characterize the salient features of the genera.

We should have preferred to have followed Nitschke, and merged *Daldinia* (*Hypoxylon concentricum*) and *Bolinia* (*Hypoxylon tubulina*) in *Hypoxylon*. A comparison of the above characters will show that the only difference in *Daldinia* is the concentric stroma, although several of the globose *Hypoxyla* exhibit faint concentric zones when in good condition. The difference in *Bolinia* is that the perithecia are immersed, with rather long necks. These are very slight generic differences indeed, as compared with

some which might have been isolated, such as the very singular *Hypoxyton lycogaloides*, B. & Br., and the equally strange and anomalous *Hypoxyton solidum*, Schwz. If any species deserved to be raised to a generic rank it was these.

We note, too, especially, the membranaceous perithecia in *Anthostoma*, and the carbonaceous perithecia in the other genera. This is an important distinction, and there can be no doubt of the word, and of its correct translation, "perithecia membranacea," without any qualification; and the same phrase is applied to *Venturia* and *Gnomonia*, with a qualification, as "perithecia sub-membranacea," hence we must expect to find the perithecia in *Anthostoma* more membranaceous than in *Venturia* and *Gnomonia*. Of course all species included by error in *Anthostoma*, which have perithecia as carbonaceous as in *Hypoxyton*, are out of place, and do not belong to the genus. If, therefore, we suggest the transfer of certain species from *Anthostoma* to *Hypoxyton*, it is with a full recognition of this important difference. The other feature of stroma immersed, or not immersed in the matrix, seems, from the examples we recognise in both genera, to be of doubtful value, and cannot be taken into account beside "perithecia membranacea."

As in the former instance we shall commence with the larger genus *Hypoxyton*, leaving *Anthostoma*, as a whole, for a future opportunity.

MEASUREMENTS.—It cannot be considered as highly satisfactory that, in a genus depending so much on the size of the sporidia in determining closely allied species, the measurements given in this work are so few. Out of 178 species, which the genus contains, only about one half has the measurements, *i.e.*, there are 85 species with no measurements of the sporidia. Of the 93 species for which there are measurements given, we are responsible for 10; Nitschke for about 24; Cesati for 5, the majority of which are wrong; and the original diagnoses for 32 measurements; leaving 22 as a balance, not over large, for which the author of the "Sylloge" is responsible. We doubt if it should be considered sufficient for the author of a work of such pretensions to aim at nothing beyond compilation, or so little, that it is almost indistinguishable. However, the following may be accepted as a supplement, although contributed by one who has no *pretensions* to such a profound study of sporidia as to enable him to advocate an entire carpological system based upon a long and universal experience.

4. ***Hypoxyton hypomiltum*, Mont.**

Sporidia in specimen from Montague, $\cdot 012\text{--}\cdot 013 \times \cdot 006$ mm.

6. ***Hypoxyton Howeianum*, Peck.**

Sporidia $\cdot 006\text{--}\cdot 007 \times \cdot 003$ mm.

8. ***Hypoxyton distillatum*, B. & Br.**

Sporidia $\cdot 01\text{--}\cdot 011 \times \cdot 004\text{--}\cdot 005$ mm.

9. ***Hypoxyton sclerophæum*, B. & C.**

Sporidia $\cdot 012 \times \cdot 005$ mm.

10. **Hypoxyton lycogaloides**, *B. & Br.*
Sporidia $\cdot 02 \times \cdot 01$ mm., verruculose, olive.
- ✓ 11. **Hypoxyton Blakei**, *B. & C.*
Sporidia $\cdot 02\text{--}\cdot 022 \times \cdot 008\text{--}\cdot 009$ mm.
20. **Hypoxyton solidum**, *B. & C.*
Sporidia $\cdot 035\text{--}\cdot 04 \times \cdot 007$ mm. lanceolate, uniseptate, pale brown.
22. **Hypoxyton decorticatum**, *Schwz.*
Sporidia $\cdot 012\text{--}\cdot 014 \times \cdot 004$ mm.
23. **Hypoxyton enteromelum**, *Schwz.*
Sporidia $\cdot 01 \times \cdot 004$ mm.
27. **Hypoxyton suberosum**, *B. & C.*
Sporidia $\cdot 022 \times \cdot 007$ mm.
28. **Hypoxyton notatum**, *B. & C.*
Sporidia $\cdot 012\text{--}\cdot 014 \times \cdot 008$ mm.
30. **Hypoxyton endoxanthum**, *Mont.*
Sporidia $\cdot 013 \times \cdot 005$ mm.
31. **Hypoxyton discolor**, *B. & Br.*
Sporidia $\cdot 012 \times \cdot 0075$ mm.
32. **Hypoxyton glomiforme**, *B. & C.*
Sporidia $\cdot 014\text{--}\cdot 015 \times \cdot 0035$ mm.
37. **Hypoxyton gemmatum**, *B. & Rav.* *Hypoxyton Walterianum*, *Rav.*
Fung. Car.
Sporidia $\cdot 01\text{--}\cdot 012 \times \cdot 006$ mm. distinctly uniseptate, brown.
42. **Hypoxyton pavimentosum**, *Ces.*
Sporidia fusiform $\cdot 05 \times \cdot 009$ mm., from specimen communicated
by Baron Cesati.
46. **Hypoxyton stigmatoidum**, *Ces.*
Sporidia $\cdot 012 \times \cdot 008$ mm., original specimen.
52. **Hypoxyton annulatum** (*Schwz.*), *Mont.*
Sporidia $\cdot 009 \times \cdot 003$ mm. in American specimen.
53. **Hypoxyton areolatum**, *B. & C.*
Sporidia $\cdot 035\text{--}\cdot 04 \times \cdot 012$ mm.
55. **Hypoxyton leucocreas**, *B. & Rav.*
Sporidia $\cdot 005 \times \cdot 0025$ mm.
59. **Hypoxyton xanthocreas**, *B. & C.*
Sporidia $\cdot 01 \times \cdot 005$ mm.
60. **Hypoxyton Fragaria**, *Ces.*
Sporidia lanceolate $\cdot 055\text{--}\cdot 06 \times \cdot 012$ mm.
64. **Hypoxyton Murrayi**, *B. & C.*
Sporidia $\cdot 013\text{--}\cdot 015 \times \cdot 005\text{--}\cdot 007$ mm.
66. **Hypoxyton Bomba**, *Mont.*
Sporidia $\cdot 016 \times \cdot 007$ mm.
70. **Hypoxyton deciduum**, *B. & Br.*
Sporidia $\cdot 015\text{--}\cdot 018 \times \cdot 003$ mm.
72. **Hypoxyton scriblitum**, *Mont.*
Sporidia $\cdot 038\text{--}\cdot 04 \times \cdot 012$ mm.
73. **Hypoxyton Petersii**, *B. & C.*
Sporidia $\cdot 008 \times \cdot 003$ mm.

74. **Hypoxylon turbinulatum** (*Schw.*), *Berk.*
Sporidia $\cdot 012 \times \cdot 0035$ mm.
80. **Hypoxylon malleolus**, *B. & Rav.*
Sporidia $\cdot 02\text{--}\cdot 022 \times \cdot 004$ mm.
81. **Hypoxylon marginatum** (*Schw.*), *Berk.*
Sporidia $\cdot 009\text{--}\cdot 01 \times \cdot 005$ mm. (North America.)
,, $\cdot 008\text{--}\cdot 009 \times \cdot 004$ mm. (Africa.)
,, $\cdot 0075 \times \cdot 0035$ mm. (Cuba.)
102. **Hypoxylon hæmatostroma**, *Mont.*
Sporidia $\cdot 01\text{--}\cdot 012 \times \cdot 0035$ mm.
103. **Hypoxylon chrysoconium**, *B. & Br.*
Sporidia $\cdot 01\text{--}\cdot 011 \times \cdot 0035$ mm.
104. **Hypoxylon crocogeplum**, *B. & C.*
Sporidia $\cdot 013\text{--}\cdot 014 \times \cdot 008$ mm.
106. **Hypoxylon trugodes**, *B. & Br.*
Sporidia nearly $\cdot 01$ mm. long.
107. **Hypoxylon florideum**, *B. & C.*
Sporidia $\cdot 01 \times \cdot 0035$ mm.
- ✓ 108. **Hypoxylon Morsei**, *B. & C.*
Sporidia $\cdot 025\text{--}\cdot 027 \times \cdot 009\text{--}\cdot 01$ mm.
109. **Hypoxylon anthochroum**, *B. & Br.*
Sporidia $\cdot 01 \times \cdot 0015$ mm.
112. **Hypoxylon jecorinum**, *B. & Rav.*
Sporidia $\cdot 009 \times \cdot 004$ mm.
113. **Hypoxylon fusco-purpureum**, *Schwz.*
Sporidia $\cdot 014 \times \cdot 007$ mm.
114. **Hypoxylon durissimum** (*Schw.*), *Berk.*
Sporidia $\cdot 008 \times \cdot 004$ mm.
118. **Hypoxylon sassafras** (*Schw.*), *Berk.*
Sporidia $\cdot 012\text{--}\cdot 014 \times \cdot 005$ mm.
123. **Hypoxylon oodes**, *B. & Br.*
Sporidia $\cdot 015\text{--}\cdot 017 \times \cdot 007$ mm.
124. **Hypoxylon epirhodium**, *B. & Rav.*
Sporidia $\cdot 009 \times \cdot 0035$ mm.
125. **Hypoxylon Lenormandi**, *B. & C.*
Sporidia $\cdot 01\text{--}\cdot 012 \times \cdot 007$ mm.
127. **Hypoxylon Broomeianum**, *B. & C.*
Sporidia $\cdot 012 \times \cdot 004$ mm.
132. **Hypoxylon tormentosum**, *Ces.*
Sporidia $\cdot 0075 \times \cdot 0035$ mm.
133. **Hypoxylon Phœnix**, *Fr.*
Sporidia $\cdot 022\text{--}\cdot 025 \times \cdot 008\text{--}\cdot 009$ mm.
134. **Hypoxylon bipapillatum**, *B. & C.*
Sporidia $\cdot 014\text{--}\cdot 016 \times \cdot 006\text{--}\cdot 007$ mm.
136. **Hypoxylon gregale** (*Schwz.*), *Berk.*
Sporidia $\cdot 012\text{--}\cdot 014 \times \cdot 0035$ mm. decidedly (and not spuriously)
uniseptate.
137. **Hypoxylon investiens** (*Schwz.*), *Berk.*
Sporidia $\cdot 008\text{--}\cdot 01 \times \cdot 004$ mm.

139. **Hypoxylon callostroma** (Schwz.), Berk.
Sporidia $\cdot 012 \times \cdot 005$ mm.
141. **Hypoxylon concurrens**, B. & C.
Sporidia $\cdot 01 \times \cdot 005$ mm.
142. **Hypoxylon umbrino-velatum**, B. & C.
Sporidia $\cdot 022\text{--}\cdot 025 \times \cdot 01$ mm.
143. **Hypoxylon colliculosum**, (Schw.)
Sporidia $\cdot 012\text{--}\cdot 013 \times \cdot 005$ mm.
145. **Hypoxylon murcidum**, B. & Br.
Sporidia $\cdot 01 \times \cdot 005$ mm.
146. **Hypoxylon polyspermum**, Mont.
Sporidia $\cdot 005 \times \cdot 002$ mm.
155. **Hypoxylon cænopus**, Fr. (Mont.).
Sporidia $\cdot 035\text{--}\cdot 04 \times \cdot 009\text{--}\cdot 01$ mm.
160. **Hypoxylon teres**, (Schwz.)
Sporidia $\cdot 016 \times \cdot 008$ mm.
163. **Hypoxylon? Ravenelii**, Sacc.
Sporidia allantoid, hyaline $\cdot 005$ mm. long.
164. **Hypoxylon erinaceum**, Mont.
Sporidia subglobose, $\cdot 004$ mm. diam.
172. **Hypoxylon transversum**, (Schwz.)
Sporidia $\cdot 012 \times \cdot 004$ mm.
174. **Hypoxylon xanthostroma**, (Schwz.)
Sporidia $\cdot 012 \times \cdot 006$ mm.
176. **Hypoxylon Catalpæ**, (Schw.)
Sporidia $\cdot 013 \times \cdot 006$ mm.
177. **Hypoxylon caries**, (Schw.)
Sporidia $\cdot 01 \times \cdot 0035$ mm.
178. **Hypoxylon illitum**, (Schw.)
Sporidia $\cdot 014\text{--}\cdot 016 \times \cdot 004$ mm.

The following species in their order of arrangement will have to be removed altogether from this genus :—

1342. **Hypoxylon lycogaloides**, B. & Br.
Stroma fleshy, not at all carbonaceous.
1343. **Hypoxylon Blakei**, B. & C. = See H. Morsei, B. & C.
1351. **Hypoxylon sclerotioideum**, B. & C.
No perithecia to be seen. Doubtful if sphaeriaceous at all.
1352. **Hypoxylon solidum**, B. & C.
No affinity with *Hypoxylon*.
1357. **Hypoxylon ceramichroum**, B. & Br.
Fleshy. Referred to *Glaziella*.
1358. **Hypoxylon gangrena**, Ces.
Only a *Sclerotium*.
1361. **Hypoxylon Peckianum**, Sacc.
The same species as *H. xanthocreas*, B. & C., vide No. 1392.

1369. *Hypoxylon genmatum*, *B. & Rav.*
 = *H. Walterianum*, *Rav. Car. Exs.*
Sporidia uniseptate. *Cfr. Valsaria.*
1372. *Hypoxylon sertatum*, *DC. & Mont.*
 = *Nummularia Sertata.*
1374. *Hypoxylon pavimentosum*, *Ces.*
 Undoubtedly a species of *Ustulina.*
1375. *Hypoxylon pauxillum*, *Ces.*
 Must be referred to *Xylaria.*
1377. *Hypoxylon Kalehbrenneri*, *Sacc.*, is *Nummularia placenta*,
Cke.
1379. *Hypoxylon pseudo-tubulina*, *Ces.*
 Not *Hypoxylon*. It has the structure of *Dothidea*, and fruit of
Botryosphaeria.
1380. *Hypoxylon heterostomum*, *Mont.*
 This is a *Nummularia.*
1383. *Hypoxylon anthracodes*, *Fr.*
 Is a *Nummularia*, but not the Borneo specimens of *Cesati*,
 which hereafter are described as *Hypoxylon Cesatianum*, *Cke.*
1385. *Hypoxylon diathrauston*, *Rehm.*
 Out of place in this genus. It is not carbonaceous, and should
 come near *Anthostoma gastrina.*
1389. *Hypoxylon comedens*, *Ces.*
 The confluent condition is *Nummularia*, the solitary form is
Rhop. cænopus (*Fr.*) according to specimens from *Cesati*.
1394. *Hypoxylon glomus*, *B. & C.*
 Has every appearance of a *Diatrype*, and, as the only specimens
 are sterile, it must be referred to "species dubiæ."
1395. *Hypoxylon Berterii*, *Mont.*
 The white stroma strengthens the impression that this is a
 peculiar form of *Xylaria.*
1400. *Hypoxylon Carabayense*, *Mont.*
 We have never seen this species, but from the description should
 consider it a *Nummularia.*
1402. *Hypoxylon congestum*, *B. & Br.*
 Transferred to *Rhopalopsis.*
1405. *Hypoxylon scriblitum*, *Mont.*
 Is clearly a *Nummularia.*
1408. *Hypoxylon cycliscum*, *Mont.*
 Is also *Nummularia.*
1411. *Hypoxylon macrocenangium*, *Ces.*
 Should also go to *Nummularia.*
1412. *Hypoxylon macromphalum*, *Mont.*
 Is such a curious and aberrant form that one hesitates to pro-
 nounce upon it, but it certainly approaches nearest to *Camillea.*

1415. *Hypoxylon microstictum*, *Mont.*
Belongs to *Nummularia*.
1416. *Hypoxylon melanaspis*, *Mont.*
We should also transfer this to *Nummularia*.
1417. *Hypoxylon pachyloma*, *Lev.*
We have not seen, but should regard it as a *Nummularia*.
1418. *Hypoxylon Moselei*, *Berk.*
Is referred to *Nummularia* without hesitation.
1423. *Hypoxylon* ? *aceris*, *C. & E.*
Cannot possibly belong to *Hypoxylon*; better in the *Fuckelia* section of *Anthostoma*.
1426. *Hypoxylon globosum*, *Fr.*
Is referred to *Xylaria*.
1427. *Hypoxylon aggregatum*, *Welw. & Curr.*
Removed to *Rhopalopsis*.
1428. *Hypoxylon tuberiforme* (*Wallr.*)
Seems to be undoubtedly *Ustulina*.
1429. *Hypoxylon Kurzianum*, *Curr.*
Was not described in "Linn. Trans.," or anywhere else that we are aware. *Rhopalopsis Kurzianum*, *Cke.*, is the *Xylaria Kurzianum*, *Curr.* *Linn. Trans.* Hence our quotation of No. 1429 in "Grevillea" xi., p. 94, was an error; as *Xylaria* is not included at all in the "Sylloge."
1441. *Hypoxylon Morsei*, *B. & C.*
There is no apparent difference between this and *Hypoxylon Blakei*, *B. & C.* (No. 1343). They have membranaceous perithecia, and go to *Anthostoma*.
1447. *Hypoxylon durissimum* (*Schwz.*).
It is impossible to separate this from *Hypoxylon annulatum*.
1455. *Hypoxylon fossulatum*, *Mont.*
Equal to *Nummularia fossulata*, *C.*
1461. *Hypoxylon bicolor*, *B. & C.*
Sporidia allantoid, hyaline. = *Diatrype bicolor*.
1469. *Hypoxylon gregale* (*Schwz.*).
Perithecia not confluent, hence not *Hypoxylon*. Sporidia uni-septate, without the least doubt. Entered again as *Valsaria gregalis* (*Schwz.*) under No. 2847, but it belongs to neither of these genera.
1475. *Hypoxylon umbrino-velatum*, *B. & C.*
Perithecia scattered, distinct. Allied to *Spharia subiculosa*, *Schwz.*
1488. *Hypoxylon cænopus* (*Fr.*).
Transferred to *Rhopalopsis*.
1489. *Hypoxylon cetrarioides*, *Welw. & Curr.*
Also in *Rhopalopsis*.

1490. *Hypoxylon xylarioides*, *Speg.*
Similarly a *Rhopalopsis*.
1491. *Hypoxylon micropus*, *Fr.*
Transferred to *Rhopalopsis*.
1492. *Hypoxylon Colensoi*, *Berk.*
Specimen in a bad condition, but also probably a *Rhopalopsis*.
1494. *Hypoxylon glebulosum*, *Ces.*
This is doubtless referable to *Xylaria*.
1495. *Hypoxylon palmigenum*, *B. & C.*
Clearly not *Hypoxylon*, sporidia colourless, structure that of *Dothidea*.
1496. *Hypoxylon erinaceum*, *B. & Rav.*
Valsa, with long-necked perithecia, and hyaline allantoid sporidia.
1497. *Hypoxylon erinaceum*, *Mont.*
Not *Hypoxylon*. Perithecia distinct, woolly. Sporidia subglobose (16 ?), texture and habit of an aggregated *Melanospora*—or perhaps allied to *Scopinella*.
1498. *Hypoxylon allantosporum*, *B. & C.*
Not *Hypoxylon*. Sporidia 5-7 septate.
1502. *Hypoxylon asilatum*, *Schwz.*
Allied to *Diatrype stigma*, with hyaline sporidia.

After removing these 50 species there still remain a few of the balance of 130 of which we have no actual knowledge, but the number is comparatively small. Other emendations will be covered by our remarks on "additions," and a proposed "rearrangement" to correct errors in interpretation as to the section in which certain imperfectly known species have been placed.

ADDITIONS.—The following species will be found in their places in the subsequent rearrangement of the genus. The three species with a non-carbonaceous stroma, transferred to *Sarcoxydon*, will be noticed in conjunction with *Anthostoma* to which they bear a closer relationship than to *Hypoxylon*.

1. ***Hypoxylon cerebrinum*** (Fee). *Xylaria cerebrina*, Sacc. Syll., No. 1224.
Ascis elongato-cylindricis. Sporidiis lanceolatis, fuscis, $\cdot 03 \times \cdot 008$ mm.
On trunks. Brazil.
Internally olivaceous, faintly concentric.
3. ***Hypoxylon cœlatum*** (*Sphaeria cœlata*), Fries Linn. v. 540.
Turbinatum ($\frac{1}{2}$ in. alt.) submarginatum, disco convexo, stromate suberoso-indurato nigricante, apice determinati excavato, stratis cellulosis verticalibus reperto, perithecii in crusta exteriori cornea periphericis minimis. Ascis cylindraccis. Sporidiis sublanco-latis, fuscis, $\cdot 014 \times \cdot 004$ mm.
On trunks. Cayenne, Sarawak.

4. **Hypoxylon corrugatum** (Fr.). *Sphaeria corrugata*, Fr. El. II. 70.

Difformes, confluent, tuberculosum, rimoso-corrugatum, ater, intus cinerascens; peritheciis profunde immersis, ostioliis papillaeformibus rugosis. Ascis cylindraceis. Sporidiis ellipticis, rectis curvulisve, fuscis, $\cdot 008 \times \cdot 0035$ mm.

On dead wood.

Extending for 2 or 3 inches, rugose, indurated.

9. **Hypoxylon viridi-rufum** (B. & Rav.) *Hypocrea viridi-rufa*, Berk. N. Amer. Fungi, 803.

Major, subglobosum, congestum, viridi-rufum; ostioliis impressis. Ascis linearibus. Sporidiis oblongis, continuis, fuscis, primum binucleatis ($\cdot 012 \times \cdot 004$ mm.).

On *Alnus serrulata*. North America (Carolina).

Seems to have been referred to *Hypocrea* in error, since it possesses none of the features of that genus.

11. **Hypoxylon ovinum**, Berk. in Herb. Kew.

Hemisphaericum vel confluent-elongatum, purpureo-nigricans, durum, laeve, subnitidum, intus fuscum. Peritheciis stratosi, atris, subglobosis. Ostioliis obsoletis. Ascis cylindricis. Sporidiis ellipticis, fuscis, dein atro-fuscis, $\cdot 016\text{--}\cdot 018 \times \cdot 007$ mm.

On wood. Orizaba, Mexico, and Tristan d'Acunha.

20. **Hypoxylon vera-crucis**, Berk. & Cke.

Subglobosum, superficiale, saepe confluent (1-2 cm. diam.) laeve rubiginosum, intus fuliginosum. Peritheciis mediis, ovatis, periphericis, prominulis. Ascis cylindraceis. Sporidiis ellipticis, utrinque attenuatis, fuscis ($\cdot 02 \times \cdot 008$).

On rotten wood. Vera Cruz (Salle).

33. **Hypoxylon multiforme**, Fr. var. *australe*, Cke.

With the habit and external aspect of the typical form, at least of the most globose state, but the sporidia smaller ($\cdot 008 \times \cdot 003$ mm.). The difference seems to be scarcely specific.

On bark and wood. Melbourne, Australia.

37. **Hypoxylon hians**, Berk. & Cke.

Hemisphaericum vel subglobosum, superficiale, atrum, nitidum, intus atro-fuliginosum. Peritheciis magnis, subglobosis, conico-elevatis, ad apicem cupulato-excavatis, centro ostiolo papillato gerentibus. Ascis cylindraceis. Sporidiis ellipticis, obtusis, fuscis ($\cdot 01\text{--}\cdot 012 \times \cdot 006\text{--}\cdot 007$ mm.).

On wood. Tasmania.

Most distinct in the cup-shaped depression around the ostiolum. Stroma about an inch in diameter.

40. **Hypoxylon Hookeri**, Berk. in Herb. Kew.

Subglobosum, mox atrum (1 cm. et ult.) intus fuliginosum. Peritheciis magnis, globosis, elevatis; ostiolo papillato. Ascis cylindraceis. Sporidiis ellipticis, fuscis ($\cdot 01 \times \cdot 004$ mm.).

On wood. India (Sir J. D. Hooker).

Resembling *H. majusculum*, but the perithecia much larger, and more prominent, in which latter respect it approaches *H. annulatum*.

41. **Hypoxylon nodulorum**, *Lex. in Herb. Kew.*

Globosum, superficiale, nigrum, opacum (1-2 cm.), rugosum, intus pallidum, duriusculum. Peritheciis globosis, mediis, periphericis. atris; ostiolo minuto papillatis. Ascis cylindraceutis. Sporidiis $\cdot 02\text{--}\cdot 022 \times \cdot 005$ mm.

On wood. Marquesas (1854).

✓ 63. **Hypoxylon pruinatum**, *Klotsch. Rosellinia pruinata*, Sacc. Syl., No. 942.

Sporidia $\cdot 02\text{--}\cdot 022 \times \cdot 008\text{--}\cdot 009$ mm.

An undoubted *Hypoxylon*, in which relationship it was placed by Klotsch.

65. **Hypoxylon eterio**, *B. & Br. Anthostoma eterio*, Sacc. Syl., No. 1133.

It is difficult to comprehend why this species has been removed to *Anthostoma*. *H. pruinatum*, Kl., *H. discolor*, B. & Br., and *H. eterio*, B. & Br., are closely allied.

✓ 67. **Hypoxylon Holwayi**, Ellis, in Amer. Nat., xvii, p. 193.

Stromate orbiculari ($2\frac{1}{2}\text{--}5$ mm. diam.) tenui, primum pruinoso, intus nigro, ostiolis atris, prominulis, acute papillosis. Peritheciis (20-30) uniseriatis. Ascis cylindricis. Sporidiis uniseriatis oblongis, fuscis, 1-2 nucleatis ($\cdot 022\text{--}\cdot 027 \times \cdot 011$ mm.).

On *Populus*. Iowa (U.S.A.)

The stroma is surrounded by a fringe of conidiiferous processes.

71. **Hypoxylon exiguum**, *Cooke.*

Pulvinatum, convexo-applanatum, atrum, ovale vel discoideum (2-3 mm. lat.) hinc illic confluentis. Peritheciis minutis, numerosis, papillatis. Ascis cylindraceutis. Sporidiis minutissimis, ellipticis, fuscis ($\cdot 0035 \times \cdot 002$ mm.).

On rotten wood. Mauritius. Alabama, Carolina, U.S.A.

A most distinct species, easily recognized by the exceedingly minute sporidia, which are a little larger in American specimens.

74. **Hypoxylon Pouceanum**, *Berk. & Cke.*

Pulvinatum, atrum, nitidum, superficiale. Peritheciis paucis, subglobosis, ostiolis in disco plano, annulato marginato papillatis, ut in *H. annulato*. Ascis cylindraceutis. Sporidiis sublanceolatis, rectis vel curvulis, fuscis ($\cdot 015 \times \cdot 004$ mm.).

On bark. Mauritius (Dr. Ayres).

Externally this has the appearance of *H. annulatum*, and we hesitated to describe it separately, on account of the difference in the fruit. It may be only a variety of *H. annulatum*, to which it is closely allied.

82. **Hypoxylon rimarum**, *Berk. & Cke.*

Pulvinulis atris, nitidis, elongatis, rimis epidermidis corticis erumpentibus. Peritheciis magnis, prominulis, papillatis, in crustam nigram confluentibus. Ascis cylindricis. Sporidiis ellipticis, obtusis, fuscis. ($\cdot 006\text{--}\cdot 007 \times \cdot 0025$ mm.).

On bark of branches. Mauritius (Sept., 1858.)

With somewhat of the habit of *H. sassafras*—the elongated pustules mostly parallel, following the fissures of the epidermis, soon quite superficial. 1 cm. long; 1-2 mm. broad.

76. **Hypoxyton chalybeum**, B. & Br. *Rosellinia nitens*, Sacc. Syll., No. 945.

If this is a *Rosellinia*, then *Rosellinia* must practically be synonymous with *Hypoxyton*—because there is really no feature whereby this can be distinguished from *Hypoxyton annulatum*.

There are seven reputed species in this section with annulate ostiola.

1. **H. polyspermum**, Mont., (1479.)
Sporidia $\cdot 005 \times \cdot 002$ mm.
2. **H. marginatum**, Schwz. (1414.)
Sporidia $\cdot 007 \times \cdot 0035$ mm. Cuba.
" $\cdot 008\text{--}\cdot 009 \times \cdot 004$ mm. Africa.
" $\cdot 009\text{--}\cdot 01 \times \cdot 004$ mm. U. States.
3. **H. durissimum**, Schwz. (1447.)
Sporidia $\cdot 008\text{--}\cdot 009 \times \cdot 0035$ mm.
4. **H. annulatum**, Schwz. (1384.)
Sporidia $\cdot 012 \times \cdot 0035$ mm. Montagne.
" $\cdot 01\text{--}\cdot 011 \times \cdot 0035$ mm. U. States.
5. **H. chalybeum**, B. & Br. (945.)
Sporidia $\cdot 012 \times \cdot 005$ mm. Ceylon.
" $\cdot 009\text{--}\cdot 012 \times \cdot 0045$ mm. Cesati.
6. **H. Pouceanum**, Berk. & Cke.
Sporidia $\cdot 015 \times \cdot 004$ mm.
7. **H. obesum**, Fr. (1401.)

This species we do not know.

Our conclusions as to these species are—that *H. polyspermum*, Mont., is a distinct species not only in difference of habit, but in its very small sporidia. That *H. marginatum* comes next, with *H. durissimum* as a synonym. That *H. annulatum* follows with *H. chalybeum* as a synonym, and *H. Pouceanum* finally—with the largest sporidia, if it be not really a variety of *H. annulatum*. Thus the seven species (reckoning *H. obesum* as probably a good species) would be reduced to four or five. In *H. chalybeum*, the original specimens extend for some inches with the perithecia immersed in a thick black carbonaceous stroma. If the specimens of *H. chalybeum* and *H. annulatum* now before us, some 40 in number, had their labels removed, and were mixed up together, it would be impossible to separate them again either by external features or fructification, although it is not difficult to separate *H. marginatum* from *H. annulatum* both by external features and by the fructification.

90. **Hypoxyton mascariensis**, Berk. in Herb. nec Montagne.

Hemisphericum, atrum, nitidum (2 mm.). Peritheciis globosis, majusculis, atris, subprominulis, ostiolo papillato praeditis. Ascis cylindraceis. Sporidiis subellipticis, fuscis ($\cdot 012 \times \cdot 005$ mm.).

On bark. British Guiana.

Externally resembling Montagne's species, but not truly crum-pent, and fruit quite different.

91. **Hypoxylon leucostomum**, Cke.

Convexum, subhemisphericum, atrum (2 mm. lat.) Peritheciis subglobosis, paucis, prominulis, ostiolo atro-impresso, annulo albo circumdato. Ascis cylindraceis. Sporidiis ovatis, continuis, atro-fuscis ($\cdot 0075 \times \cdot 004$ mm.).

On twigs. Panure (Brazil).

Distinguished from its allies by the white disc round the ostiolum.

93. **Hypoxylon Ayresii**, Berk. in Herb.

Hemisphaericum, depressum, hinc illic confluens, atrum, fragile. Peritheciis globosis vix confertis, ostiolo punctiformi, leniter prominulo. Ascis cylindraceis. Sporidiis ellipticis, rectis curvulisve, fuscis, $\cdot 01\text{--}\cdot 012 \times \cdot 0045$ mm.

On bark. Mauritius.

Usually less than a centimetre in diameter.

95. **Hypoxylon spondylinum**, Fr., Summa, V. Scan. p. 383. *Nummularia spondylina*, Sacc., No. 1542.

Hemispherical, not at all resembling *Nummularia*. Authentic specimen too small for analytical examination.

96. **Hypoxylon ramosum**, Schwz. (ubi ?) in Herb. Berk.

Convexum, pulvinatum, erumpens, atrum (1 cm.) Peritheciis subglobosis, sparsis, atris, nec prominulis, ostiolo pertusis. Ascis cylindraceis. Sporidiis sublanceolatis, continuis, fuscis, rectis, curvulisve, $\cdot 016\text{--}\cdot 018 \times \cdot 0035$ mm.

On branches. Indiana, U.S.

109. **Hypoxylon piceum** Ellis in Amer. Nat., xvii., p. 193.

Effusum, subellipticum vel elongatum, plerumque confluens. (4-8 cm. long), atro-fuscum, rugosum, pulvero luteolo tectum, intus nigrum. Peritheciis 2-3 seriatis, confertissimis, compressis, ostiolo minuto, vix visibili. Sporidiis naviculoideis, fuscis ($\cdot 011\text{--}\cdot 012\text{--}\cdot 012 \times \cdot 004$ mm.).

On rotten wood. Iowa (U.S.A.).

110. **Hypoxylon Fendleri**, Berk. in Herb.

Effusum, determinatum, crassum, rugosum, fulvum, demum atro-fuscum. Peritheciis distinctis, globosis, elevatis, ostiolo papillato nigro. Ascis cylindraceis. Sporidiis arcte ellipticis, rectis curvulisve, fuscis ($\cdot 012\text{--}\cdot 013 \times \cdot 004$ mm.).

On rotten wood. Venezuela.

Somewhat like an effused state of *H. multiforme*, or a thick form of *H. ferruginosum*. At first tawny, then dark-brown, nearly black, but not at all purplish or ferruginous.

114. **Hypoxylon ianthinum**, Cke.

Stromate in ligno effuso, pulvero ianthino obsito, demum nigricante. Peritheciis stipatis, obovatis, vertice sub-rotundatis, confluento-planisve. Ostiolo minute papillato. Ascis cylindraceis. Sporidiis ellipticis, obtusis, continuis, fuscis, $\cdot 015 \times \cdot 006$ mm.

On naked wood. U. States. (Ravenel, No. 1579.)

115. **Hypoxylon atropunctatum**, Schwz. *Anthostoma atropunctata*, Sacc. Syll., No. 1102.

Sporidia $\cdot 03 \times \cdot 01$ mm.

We cannot accept this as a species of *Anthostoma*.

116. **Hypoxylon capnodes**, B. & Br. *Anthostoma capnodes*, Sacc Syll., No. 1113.
Sporidiis ellipticis, continuis, fuscis, $\cdot 01\text{--}\cdot 012 \times \cdot 005$ mm.
On wood. Swan River, Australia.
106. **Hypoxylon hæmatites**, Lev. in *Herb. Berk.*
Effusum, crustaceum, indeterminatum, rugosum, læte aurantiorubrum, demum ferrugineo-rubrum, intus nigricans. Peritheciis densissime stipatis, sub-globosis, prominulis, pertusis. Ascis cylindraceis. Sporidiis ellipticis, utrinque attenuatis, atro fuscis ($\cdot 018 \times \cdot 005$ mm.).
On wood. Marquesas Islands, and Endeavour River, Australia.
Brighter in colour than *H. rubiginosum*, and sporidia much larger.
122. **Hypoxylon ochraceo-fulvum**, Berk. & Cke.
Effusum, tenue, ochraceo-fulvum, primitus sub-orbiculare, margine sterili, byssoideo, dein confluens irregularique. Peritheciis atro-fuscis, globosis, minimis, sub-prominulis, papillatis. Ascis cylindraceis. Sporidiis ellipticis, continuis, fuscis, $\cdot 008\text{--}\cdot 01 \times \cdot 0045$ mm.
On bark. Nirwab Jungle, India.
124. **Hypoxylon Cesatianum**, Cke. (*Hypoxylon anthracodes*, Cesati. Fungi Born.)
Effusum, indeterminatum, aterrimum, sub-rugosum. Peritheciis irregularibus, majusculis, prominulis, ostiolis punctiformibus. Ascis cylindraceis. Sporidiis amygdalæformibus, atro-fuscis ($\cdot 02\text{--}\cdot 022 \times \cdot 01$ mm.).
On bark. Sarawak (Cesati).
Certainly quite distinct from *Nummularia anthracodes*, to which it was referred by Baron Cesati.
131. **Hypoxylon hypoleucum** (B. & Br.). *Sphaeria hypoleuca*, B. & Br. Ceylon Fungi, No. 1116.
Peritheciis globoso-depressis, confluentibus, in mycelio arcte adnato parce innatis. Ascis cylindraceis. Sporidiis ellipticis, continuis, fuscis ($\cdot 012 \times \cdot 004$ mm.).
On bark. Ceylon.
Resembling in habit *Hyp. udum*.
134. **Hypoxylon tinctor**, (B.) *Diatrype tinctor*, Sacc. Syll., No. 744.
Sporidiis ellipticis, rectis curvulisque, fuscis ($\cdot 018 \times 008\text{--}009$ mm.).
On wood of *Platanus*. U. States.
153. **Hypoxylon irregulare**, Cke.
Irregulariter effusum, atrum, tenue, rugoso-undulatum. Peritheciis stipatis, immersis, sub-globosis, in superficie externa vix elevatum. Ostiolis papillatis, demum deciduis. Ascis cylindraceis. Sporidiis allantoideis, fuscis ($\cdot 01 \times \cdot 0035$ mm.).
On rotten wood. Mauritius (Ayes, 1861).
Allied to *H. investicus*, S., which it much resembles, but the perithecia are less distinctly indicated.

154. **Hypoxylon glomeratum**, Cke.

Pulvinatum, convexum, mox confluens effusumque, atrum, crassum, in ligno nigrificato expansum. Peritheciis mediis, globosis, leniter vel vix prominulis. Ostiolis punctiformibus. Ascis cylindraccis. Sporidiis arete ellipticis, fuscis ($\cdot 008 \times \cdot 003$ mm.).

On decorticated branches. Mauritius.

Thicker than *H. irregulare*, and sporidia smaller. Confluent masses effused for several inches.

155. **Hypoxylon Beaumontii**, B. & C. North Amer. Fungi, No. 864.
Valsaria ? *Beaumontii*, Sacc., No. 2848.

Sporidiis ellipticis, continuis, fuscis.

On branches of *Coniferae*. U. States.

The sporidia are certainly not septate in the original specimens. It is an effused *Hypoxylon*.

162. **Hypoxylon Massaræ**, De Not. *Anthostoma Massaræ*, Sacc. Syll., No. 1141.

Said by Saccardo "Perithecia not carbonaceous," and hence not *Hypoxylon*, but allied to *A. gastrinum*, a conclusion in which we do not concur.

163. **Hypoxylon prorumpens** (Fr.). *Sphæria prorumpens*, var. *lignatilis*, Fries. Scler. Suec., No. 383.

Erumpens, inaequabile, nigrum, sub-innatum, lineari-extensum. Peritheciis irregulariter confluentibus. Ascis cylindraccis. Sporidiis arete ellipticis, fuscis ($\cdot 006 \times \cdot 002$ mm.).

On naked wood.

This is clearly not the *Entype prorumpens*, Sacc. Syll., No. 642, but an evident *Hypoxylon*.

ARRANGEMENT.—It appears to us that the two main divisions into *Eu-hypoxylon* and *Placoxylon* are insufficient for facility of reference, which, after all, is the practical utility of sub-divisions of genera. We therefore propose, after removing the three species with a fleshy stroma to the genus *Sarcoxylon*, to make the following distribution of the species of *Hypoxylon* :—

I. **MACROXYLON**.—Large indurated irregular forms, with a firm and rather fibrous internal substance, of which *Hyp. cerebrinum*, Fee, is the type.

II. **PHYLACIA**.—With an erect, smooth, shining (laccate) stroma, of which *Hyp. turbinatum*, Berk., is the type.

III. **SPHÆROXYLON**.—Including species with a globose or sub-globose stroma.

IV. **CLITOXYLON**.—Including pulvinate species with a more or less convex, determinate stroma.

V. **PLACOXYLON**.—With the stroma more or less widely effused.

VI. **ENDOXYLON**.—Stroma more or less immersed in the matrix.

HYPOXYLON.

I. MACROXYLON. Large, indurated, irregular, fibrous within.*a. Perithecia monostichons.*

1. *Hypoxylon cerebrinum*, Fee. 1224.
2. " *Wrightii*, B. & C. 1533.
3. " *cælatum*, Fr.
4. " *corrugatum*, Fr.
5. " *sclerophæum*, B. & C. 1341.
6. " *placentiforme*, B. 1535.
7. " *suborbiculare*, Curr. 1536.
8. " *Broomeanum*, B. & C. 1460.
9. " *viridi-rufum*, B. & Rav.

b. Perithecia stratose.

10. *Hypoxylon Petersii*, B. & C. 1406.
11. " *ovinum*, Berk.

II. PHYLACIA. Stroma erect, laccate.*a. Species perfectæ.*

12. *Hypoxylon turbinatum*, Berk.

b. Species imperfectæ.

- a. *Hypoxylon sagræanum*, Mont.
- b. " *globosum*, Lev.
- c. " *poculiformis*, Lev.
- d. " *Carteri*, Berk.
- e. " *ramulosum*, Schwz.

III. SPHEROXYLON. Stroma superficial, globose or subglobose.*a. Externally coloured, not black.*

13. *Hypoxylon coccineum*, Bull. 1333.
14. " *Howeianum*, Peck. 1338.
15. " *commutatum*, Ntke. 1350.
16. " *deciduum*, B. & Br. 1403.
17. " *enteromelum*, Schwz. 1355.
18. " *suberosum*, B. & C. 1359.
19. " *pulchellum*, Sacc. 1335.
20. " *vera-crucis*, B. & Cke.
21. " *argillaceum*, Pers. 1337.
22. " *palumbinum*, Quel. 1339.
23. " *rutilum*, Tul. 1344.

- 24. Hypoxylon Laschii, Ntke. 1345.
- 25. „ luridum, Ntke. 1347.
- 26. „ Bagnisii, Sacc. 1348.
- 27. „ notatum, B. & C. 1360.
- 28. „ gilvum, Jungh. 1353.
- 29. „ scleroderma, Mont. 1334.
- 30. „ distillatum, B. & Br. 1340.
- 31. „ botrys, Ntke. 1349.
- 32. „ fuscum, Pers. 1368.

b. Stroma externally black.

- 33. Hypoxylon multiforme, Fr. 1376.
- 34. „ teres, Schwz. 1493.
- 35. „ majusculum, Cke. 1369.
- 36. „ malleolus, B. & C. 1413.
- 37. „ lians, B. & Cke.
- 38. „ areolatum, B. & C. 1386.
- 39. „ avellana, Ces. 1425.
- 40. „ Hookeri, Berk.
- 41. „ nodulorum, Lev.
- 42. „ fragaria, Ces. 1393.
- 43. „ cohærens, Pers. 1370.
- 44. „ leucostigma, Lev. 1391.
- 45. „ comaropsis, Mont. 1398.
- 46. „ bomba, Mont. 1399.
- 47. „ Murrayi, B. & C. 1397.
- 48. „ placenta, Link. 1404.
- 49. „ turbinulatum, Schwz. 1407.
- 50. „ campotrichum, Mont. 1409.
- 51. „ porosum, Mont. 1381.
- 52. „ glomiforme, B. & C. 1364.

IV. CLITOXYLON. Stroma pulvinate, more or less convex, not effused.

a. Stroma externally coloured, not black.

- 53. Hypoxylon xanthocreas, B. & C. 1302, 1361.
- 54. „ hæmatostroma, Mont. 1435.
- 55. „ epiphlaenum, R. & C. 1444.
- 56. „ hypomiltum, Mont. 1336.
- 57. „ decorticatum, Schwz. 1354.
- 58. „ irradians, Mont. 1424.
- 59. „ discoideum, Cke. 1316.
- 60. „ vinosum, Mont. 1365.
- 61. „ vividum, B. & Br. 1356.
- 62. „ quisquilarum, Mont. 1366.
- 63. „ pruinatum, Klot. 942.
- 64. „ discolor, B. & C. 1363.
- 65. „ eterio, B. & Br. 1133.

66. *Hypoxylon endoxanthum*, Mont. 1362.

67. „ *Holwayi*, Ellis.

b. Stroma externally black.

68. *Hypoxylon leucocreas*, B. & R. 1388.

69. „ *lucidulum*, Mont. 1390.

70. „ *microsporum*, Ces. 1417.

71. „ *exiguum*, Cke.

72. „ *stigmaeum*, Ces. 1378.

73. „ *annulatum*, Schwz. 1384.

74. „ *Ponceanum*, B. & Cke.

75. „ *durissimum*, Schwz. 1447.

76. „ *chalybeum*, B. & Br. 945.

77. „ *obesum*, Fr. 1401.

78. „ *marginatum*, Schwz. 1414.

79. „ *polyspermum*, Mont. 1479.

80. „ *callostroma*, Schwz. 1472.

81. „ *smilacicolum*, Howe. 1371.

82. „ *rimarum*, B. & Cke.

83. „ *sassafras*, Schwz., including also *H. fucicolor*, B. & C. 1451.

84. „ *xanthostromum*, Schwz. 1507.

85. „ *Catalpæ*, Schwz. 1509.

86. „ *approximans*, Ces. 1481.

87. „ *exurgens*, Mont. 1387.

88. „ *transversum*, Schwz. 1505.

89. „ *Javanicum*, Lev. 1382.

90. „ *Mascarensis*, Berk. not Mont.

91. „ *leucostomum*, Cke.

92. „ *pauperatum*, Karst. 1373.

93. „ *Ayresii*, Berk.

94. „ *undosum*, Lev. 1410.

95. „ *spondylinum*, Fr. 1542.

96. „ *ramosum*, Schwz.

97. „ *monticulosum*, Mont. 1396.

98. „ *Mauritanicum*, D. R. & M. 1418.

99. „ *Phoenix*, Fr. 1466.

100. „ *culmorum*, Cke. 1416.

101. „ *Kurzianum*, Curr. 1429.

v. *PLACOXYLON.* Stroma broadly and widely effused.

a. Externally coloured, not black.

102. *Hypoxylon purpureum*, Ntke. 1430.

103. „ *perforatum*, Schwz. 1431.

104. „ *atropurpureum*, Fr. 1433.

105. „ *rubiginosum*, Pers. 1434.

106. „ *hæmatites*, Lev.

107. „ *trugodes*, B. & Br. 1439.

108. *Hypoxylon murcidum*, B. & Br. 1478.
 109. " *piceum*, Ellis.
 110. " *Fendleri*, Berk.
 111. " *anthochroum*, B. & Br. 1442.
 112. " *fuscopurpureum*, Schwz. 1446.
 113. " *florideum*, B. & C. 1440.
 114. " *ianthinum*, Cke.
 115. " *atropunctatum*, Schwz. 1102.
 116. " *capnodes*, Berk. 1113.
 117. " *jecorinum*, B. & Rav. 1445.
 118. " *crocopeplum*, B. & C. 1437.
 119. " *crocatum*, Mont. 1438.
 120. " *miniaturum*, Cke. 1432.
 121. " *subgylvum*, B. & Br. 1443.
 122. " *ochraceofulvum*, B. & Cke.
 123. " *chrysoconium*, B. & Br. 1436.

b. Externally black.

124. *Hypoxylon Cesatianum*, Cke.
 125. " *stygium*, Lev. 1452.
 126. " *tormentosum*, Ces. 1465.
 127. " *stigmatenum*, Cke. 1453.
 128. " *oodes*, Berk. 1456.
 129. " *bifrons*, Not. 1483.
 130. " *æneum*, Ntke. 1483.
 131. " *hypoleucum*, B. & Br.
 132. " *epirhodium*, B. & R. 1457.
 133. " *punctulatum*, B. & R. 1534.
 134. " *tinctor*, Berk. 741.
 135. " *macrosporum*, Karst. 1473.
 136. " *serpens*, Pers. 1448.
 137. " *Archeri*, Berk. 1449.
 138. " *effusum*, Ntke. 1450.
 139. " *Vogesiacum*, Pers. 1454.
 140. " *fragile*, Ntke. 1459.
 141. " *Lenormandi*, B. & C. 1458.
 142. " *investiens*, Schwz. 1470.
 143. " *concurrents*, B. & C. 1474.
 144. " *crustaceum*, Ntke. 1453.
 145. " *reticulatum*, K. 1454.
 146. " *subterraneum*, Fckl. 1462.
 147. " *unitum*, Fr. 1476.
 148. " *colliculosum*, Schwz. 1477.
 149. " *caries*, Schwz. 1510.
 150. " *allantoideum*, Cke. 1480.
 151. " *Michelianum*, Not. 1482.
 152. " *illitum*, Schwz. 1511.
 153. " *irregulare*, Cke.
 154. " *glomeratum*, Cke.

- 155. *Hypoxylon Beaumontii*, B. & C. 2848.
- 156. " *atramentosum*, Schwz. 1503.
- 157. " *bipapillatum*, B. & C. 1467.
- 158. " *incrustans*, P. 1504.

VI. ENDOXYLON. Stroma more or less immersed.

- 159. *Hypoxylon udum*, Pers. 1485.
- 160. " *minutum*, Ntke. 1486.
- 161. " *semi immersum*, Ntke. 1487.
- 162. " *Massaræ*, Not. 1141.
- 163. " *prorumpens*, Fr.

DUBIÆ.

- 164. *Hypoxylon sclerotoideum*, B. & C. 1351.
- 165. " *gangrena*, Ces. 1358.
- 166. " *lobatum*, Fr. 1499.
- 167. " *glomus*, B. & C. 1394.
- 168. " *Uranis*, Mont. 1500.
- 169. " *exertum*, Fr. 1501.
- 170. " *exaratum*, Schwz. 1506.
- 171. " *sphæriostomum*, Schwz. 1508.
- 172. " *hydnicolum*, Schwz. 1471.
- 173. " *arecarium*, Bory. 1468.

Two questions of nomenclature must be alluded to here. *Hypoxylon crustaceum* (Sow.) Ntke. From the small figure, scarcely an inch square of external habit only, Nitschke ventured to call a species *H. crustaceum* (Sow.) without any knowledge of what the fruit of Sowerby's *H. crustaceum* was. This was certainly not justifiable, but he did not venture to cite "Britain" as a locality for the species. We have no knowledge of Nitschke's species as British at all. It was undoubtedly unknown to Sowerby, and the species must *not* be associated with Sowerby's name, or figure, at all. Saccardo has repeated these errors, and thus made them his own. It is similar to the case of *Sphæria millepunctata*, Grev., which for some time continental mycologists persisted in applying to the wrong species.

The other instance is that of *Hypoxylon confluens*. Whether there is sufficient evidence to determine what was, or was not, the species of Tode, we have certainly not been in the habit of applying the name to *H. udum*, but as we believe, with considerable uniformity, to the species which Nitschke calls *H. semi-immersum*. There is very little doubt that this latter species has generally been called *Hypoxylon confluens*. Hence, instead of introducing a new name and merging *Hyp. confluens* in *H. udum*, it would have been more in accordance with botanical rule and practice to have retained the name of *Hypoxylon confluens* for what has been denominated

Hyp. semi-immersum. We find that the Rev. M. J. Berkeley regarded *Hypoxylon confluens* as the species now answering to the name of *Hypoxylon semi-immersum*, and we doubt not, as far as British Botanists are concerned, we should have their sympathy in restoring the name of *Hyp. confluens* instead of *H. semi-immersum*.

This communication has already extended to such a considerable length that the remaining allied genera must stand over until next issue of this Journal.

NEW BRITISH MARINE ALGÆ.

BY E. M. HOLMES, F.L.S.

(Continued from Vol. x., p. 111.)

PHÆOSPOREÆ.

- * **Phyllitis Fascia**, Ktze. *Phyc. gen.* p. 342 (non **Laminaria Fascia** Harr.).

Elie, Fifeshire, E. M. Holmes. Berwick-on-Tweed, E. Batters.

- * **Dictyosiphon fœniculaceus**, Grev. subsp. **hispidus** Kjellm, *om Spets. Thall.* II., p. 39, tab. II.

Joppa, near Edinburgh, G. W. Traill. Growing usually on *Scytosiphon lomentarius*, *Phyllitis cœspitosa* and *Chondrus crispus*.

- * **D. hippuroides**, Aresch. *Obs. Phyc.* III., p. 27; *Phyc. mar. Sc. tab.* 6, A. Parasitical on *Chordaria flagelliformis*.

Portobello, Dunbar, Braxmouth, Earlsferry, Kinghorn, North Berwick, G. W. Traill. Berwick-on-Tweed, E. Batters.

- * **D. Mesogloia**, Aresch. *Obs. Phyc.* III., p. 33, *Exs. n.* 106.

In shallow pools at Elie, Fifeshire, E. M. Holmes. Longniddry, G. W. Traill.

- * **Phlæospora subarticulata**, Aresch. *Bot. Not.* 1873, p. 132; *Lyngb. Hydr.*, t. 14, c. f. 3.

Occurs in Cock's fasciculi, v. 43, sub **Dictyosiphon fœniculaceus**, *fide* Bornet *Etudes Phyc.*, p. 16. Kildonan, J. Cooke. Carnarvon, E. M. Holmes. Cullerecoats, Miss E. Bainbridge. Commemara, Mrs. Stokes in Herbarium Gray.†

The specimen in Cock's fasciculus under *Dictyosiphon fœniculaceus* was probably obtained from the North of England or Scotland, since there is no record of the plant as a southern species in this country. The transverse lines seen on the frond under a good lens distinguish it at sight from *D. fœniculaceus*, which it otherwise closely resembles in appearance.

* The species marked with an asterisk will be published in forthcoming fasciculi.

† Mrs. J. E. Gray's collection of Marine Algæ is now in the University Herbarium at Cambridge.

- * **P. tortilis**, *Aresch. Bot. Not.* 1876, p. 34; *Kjellm. on Spets. Thall.* II., t. 1, f. 21.
Cullercoats, Miss E. Bainbridge. Joppa, G. W. Traill. Kildonan, Herb. Landsborough, Berwick-on-Tweed, E. Batters. Filey, 1868, C. Stevens, in Herbarium Gray.
- * **Streblonema investiens**, *Thur.*
Parasitical on *Gracilaria compressa*. Weymouth, E. M. Holmes.
- * **S. reptans**, *Crn.*
Parasitical on *Cladophora*. Trebarwith, Cornwall, Miss A. Cresswell. On *Chaetomorpha*, Weymouth, Miss K. Appleford. On *Cladophora latevirens*, Sidmouth, E. M. Holmes.
- * **Ectocarpus simplex**, *Crn. Flor. du Finist.* p. 163; *Desm. Exs.* 1806.
On *Codium tomentosum*. Lizard, E. M. Holmes.
- * **E. insignis**, *Crn. Flor. du Finist.* p. 163; *Alg. Mar. Finist. exs.* 14.
On *Zostera* roots. Smallmouth, near Weymouth, E. M. Holmes.
- E. elegans**, *Thur. Alg. Mar. de Cherb.* p. 77, pl. II., fig. 1-2.
On *Desmarestia aculeata*. Falmouth, F. W. Smith.
- E. ramellosus**, *Ktz. Phyc. germ.* p. 235.
Padstow, R. V. Tellam.
- E. terminalis**, *Kutz. Phyc. germ.* p. 236; *tab. phyc.* v., t. 74, f. 2.
On *Chaetomorpha ærea*. Smallmouth, near Weymouth, Miss K. Appleford. On *Corallina*. Fowey, R. V. Tellam.
- * **Giraudia sphacelarioides**, *Derb. et Sol. in Cast. Cat. pl. Mars. suppl.* p. 101; *Phys. des Algæ.* pl. XIV., f. 12-16; *Aresch. Obs. Phyc.* III., fig. 1.
On decaying *Zostera* leaves. Smallmouth, near Weymouth, E. M. Holmes.
- * **Sphacelaria plumigera**, *Holmes.*
Eastbourne, W. Borrer. Joppa, G. W. Traill. Carnarvon, J. E. Griffiths. Cullercoats, Miss E. Bainbridge. Folkestone, E. M. Holmes. Herne Bay, Torquay, Herbarium Gray.
This plant has long passed as *Lyngbye's Sphacelaria plumosa*, but is really a *Cladostephus*, since it has fruit on minute special branches on the main axis, as in that genus, with which also it agrees in stem structure. I have therefore named it *Cladostephus plumosus*. *S. plumigera* is a true *Sphacelaria*, with sporangia only on the ultimate ramuli. Borrer's specimen, found at Eastbourne in 1808, and now in the Herbarium of the British Museum, has unilocular sporangia.
- * **S. scoparioides**, *Lyngb. Hydr.* p. 107, t. 32, fig. c.
Bognor, 1831, Mrs. Gray, in Herb. Brit. Mus. Brighton, 1859, Mrs. Merrifield.
- * **S. pseudoplumosa**, *Cr. Flor. du Finist.* p. 164, pl. XXV., fig. 161.
Ilfracombe. Mixed with *S. sertularia*, and so named in Herb. Griffiths, in Linn. Soc. Brighton, Mrs. Merrifield, 1859. Smallmouth, near Weymouth, E. M. Holmes.
- * **Sp. cæspitula**, *Lyngb. Hydr.* p. 105, t. 32, fig. a.
Berwick-on-Tweed, E. Batters.

* *Cladostephus plumosus*, Holmes *Cladostephus distichus*, Holmes MSS. (Traill in *Algæ of Firth of Forth Proc. Royal Phys. Soc. Edinb.*, 1882).

Sphacelaria plumosa, Lyngb. *Hydr. p.* 100, *t.* 30, *fig. c.*

Ardrossan and Portincross, Rev. D. Landsborough. Anglesea, J. E. Griffiths. Kinghorn, G. W. Traill. Killbride, Ayrshire, sub *S. plumosa* in *Herb. Brit. Mus.*

Stilophora Lejolisii, Thur. in *Alg. Mar. de Cherb.*, *pr.* 8-9.

Looe, Cornwall, R. V. Tellam. Brighton, Mrs. Merrifield. Arran, *Herb. Gray.*

ALGÆ BRITANNICÆ RARIORES EXSICCATÆ.

FASC. I.

By E. M. HOLMES.

Of the twenty-five species contained in the first fasciculus, twenty are new to Britain since Harvey's *Phycologia Britannica* was published, and the other five are rarely met with in herbaria. No. 6, *D. Mesogloia*, has probably been mistaken in the North of England and Scotland, for *Mesogloia virescens*, from which it is only distinguishable when seen growing by the acute apices of the fronds. Nos. 19 and 20, *Phlaspora subarticulata* and *P. tortilis* have undoubtedly passed unnoticed in collections under the name of *Dictyosiphon fœniculaceus*. The fruits of *Sphacelaria plumigera* (23), and of *Cladostephus plumosus* (1), have only recently been described, and the two plants so closely resemble each other in the sterile state that only a careful examination of a series of specimens, or a microscopic section of the frond, would render it easy to separate them.

1. *Cladostephus plumosus*, Holmes. (*Sphacelaria plumosa*, Lyngb.)
Ardrossan, August, 1882, Rev. D. Landsborough.
2. *Corallina Mediterranea*, Aresch.
The Lizard, July, 1882, E. M. Holmes.
3. *Cordylecladia erecta*, J. Ag. (*Tetraspores*).
Folkestone, November, 1881, E. M. Holmes.
4. *Dictyosiphon fœniculaceus*, Grev. *subsp.*, hispidus, Kjellm.
Joppa, near Edinburgh, June, 1881, G. W. Traill.
5. *Dictyosiphon hippuroides*, Aresch.
Dunbar, June, 1881, G. W. Traill.
6. *Dictyosiphon Mesogloia*, Aresch.
Longniddry, July, 1881, G. W. Traill.

7. *Ectocarpus granulosus*, *Ag.* (*plurilocular sporangia*).
Exmouth, July, 1881, E. M. Holmes.
8. *Ectocarpus simplex*, *Crn.* on *Codium tomentosum*, *Ag.*
The Lizard, July, 1882, E. M. Holmes.
9. *Elachista Grevillii*, *Arn.*, on *Cladophora rupestris*, *Ktz.*
Berwick-on-Tweed; October, 1882, E. Batters.
10. *Giraudia sphacelarioides*, *Derb.*, on *Zostera*.
Weymouth, August, 1882, E. M. Holmes.
11. *Lomentaria reflexa*, *J. Ag.* (*Tetraspores*).
Sidmouth, June, 1882, E. M. Holmes.
12. *Melobesia Corallinæ*, *Crn.*, on *Corallina officinalis*, *L.*
The Lizard, July, 1882, E. M. Holmes.
13. *Melobesia Laminariæ*, *Crn.*, on *Laminaria Cloustoni*, *Le Jol.*
Weymouth, August, 1882, E. M. Holmes.
14. *Melobesia Thureti*, *Bornet*, on *Jania corniculata*, *Lmx.*
Sidmouth, June, 1881, and The Lizard, July, 1882, E. M.
Holmes.
15. *Monostroma laceratum*, *Thur.*
Wadebridge, May, 1881, R. V. Tellam.
16. *Nitophyllum reptans*, *Crn.*, on *Laminaria Cloustoni*, *Le Jol.*
Berwick-on-Tweed, 1882, E. Batters.
17. *Nitophyllum uncinatum*, *J. Ag.*
Exmouth, June, 1882, The Lizard, July, 1882, E. M.
Holmes.
18. *Phyllophora palmettoides*, *J. Ag.*
Sidmouth, February, 1881, E. M. Holmes.
19. *Phlœospora subarticulata*, *Aresch.*
Carnarvon, April, 1881, E. M. Holmes.
20. *Phlœospora tortilis*, *Aresch.*
Elie, Fifeshire, July, 1881, G. W. Traill.
21. *Prasiola marina*, *Crn.*
Joppa, near Edinburgh, April, 1881, G. W. Traill.
22. *Sphacelaria cirrhosa*, *Ag.* var. *patentissima*, *Grev.* on the
roots of *Zostera*.
Weymouth, August, 1882, E. M. Holmes.
23. *Sphacelaria plumigera*, *Holmes* (*S. plumosa*, *Harv.* partim),
(*unilocular sporangia*).
Joppa, near Edinburgh, January, 1881, G. W. Traill.
24. *Sphacelaria pseudo-plumosa*, *Crn.*
Weymouth, August, 1882, E. M. Holmes.
25. *Streblonema investiens*, *Thur.*, on *Gracilaria compressa*,
J. Ag.
Weymouth, August, 1882, E. M. Holmes.

MYCOLOGIC ART.

TABULÆ ANALYTICÆ FUNGORUM, by M. Patouillard. Part i., 8vo. Poligny. 100 figs.

FUNGI AGRUMICOLI, by Dr. O. Penzig. 8vo. 136 plates. Padua.

FIGURES PEINTES DE CHAMPIGNONS, by L. Lucand. Part iii., 4to. 25 plates.

FUNGI ITALICI, by Prof. P. A. Saccardo, fasc xxix-xxxii.

At no period, perhaps, during the past fifty years has illustrative art, as applied to Mycology, been so devoid of art as at the present time, if we may judge by the examples which have come under our notice. We have named four works above, of which certainly none pass beyond mediocrity, even if they attain it. In some the efforts at reproduction result in complete caricatures. Doubtless the authors themselves have a good opinion of their works, but most persons will regard that as an hallucination. The well-intentioned efforts of M. Patouillard have ended in the production of a number of very extraordinary outlines, drawn, it may be, from his inner consciousness, and especially in the case of *Pis-tillaria*, of a very low grade of art.

Dr. Penzig reprints, without any intimation that he is doing so, letterpress from one work without altering the paging, and illustrations from another. These are sold to unsuspecting victims as a new and original work, but when they arrive are found to be reprints, of which one copy is quite sufficient. The execution is exceedingly rough, and the colouring equal to the bright red and green examples of the artistic efforts of an infant school.

The third part of Lucand's Iconographic is no better than its predecessors. This part contains 25 plates, illustrating as many common and well-known species, and the price is thirty shillings. Its artistic merits are of a very low order, and by no means such as the purchaser would expect to get for his money. The work is announced as a continuation of the Champignons of Bulliard, but we venture to think that had it appeared in his day Bulliard would scarcely have felt flattered by the compliment.

The "Fungi Italici" gives an immense number of figures. Some would wish that these were fewer in number if they were only better in quality. They are evidently in many cases intended rather to illustrate the author's views as to what a species ought to be than what it is. As, for instance, in the so-called *Cercospora vitis*, the spores are turned topsy-turvy, and attached by the wrong end so as to justify its inclusion in *Cercospora*. If the figures are not very artistic, it would be some counterpoise if they made up by fidelity.

AUSTRALIAN FUNGI.

BY M. C. COOKE. (*Continued from p. 104.*)

PYRENOMYCETES.

ORD. I. **HYPOCREACEÆ**, *de Not.*Gen. 1. **CORDYCEPS**. *Fr.***Cordyceps Gunnii**, *Berk. Fl. Tasm.* II., 278.

Victoria, Tasmania.

Cordyceps entomorrhiza, *Fr. Summ. V. Scan.*, 381.

Victoria.

Cordyceps menesteridis, *Berk. & Mull. in Gard. Chron.*

Victoria.

Only a variety of *C. entomorrhiza*.Gen. 2. **HYPOCREA**. *Fr.***Hypocrea cerebriformis**, *Berk. Linn. Journ.* XIII., 179.

S. Australia.

Hypocrea semiorbis, *Berk. Fl. Tasm.* II., 278.

Tasmania.

Hypocrea citrina, *Fr. Summ. V. Scan.*, 185.

Tasmania.

Hypocrea rufa (*Pers.*), *Fr. Summ. V. Scan.*, 383.

Tasmania.

Hypocrea membranacea, *B. & Br. Proc. Linn. Soc. N. S. W.* v, 89.

Queensland.

Gen. 3. **HYPOMYCES**. *Tul.***Hypomyces tomentosus** (*Fr.*), *Grev. IV.*, 15.

Tasmania.

Hypomyces rosellus, *A. & S. Consp.* 55, t. 7, f. 3.

W. Australia.

Gen. 4. **SPHEROSTILBE**. *Tul.***Sphaerostilbe dubia**, *Berk. Linn. Journ.* XVIII., 389.**Sphaerostilbe cinnabarina** (*Mont.*), *Tul. Carp.* III., 103.

Clarence River.

Gen. 5. **NECTRIA**. *Fr.***Nectria quisquilaris**, *Cke. Grevillea VIII.*, 65.

Victoria.

Nectria sanguinea (*Sibth.*), *Fr. Summa.*, 388.

W. Australia.

Nectria agaricicola, *Berk. Fl. Tasm.* II., 278, t. 183, f. 14.

Tasmania.

Nectria tephrothele, *Berk. Fl. Tasm.* II., 278.
Tasmania.

Nectria coccinea, *Fr. Summa.* 388.
Tasmania, N. S. Wales, Queensland.

Nectria fusarioides, *Berk. Fl. Tasm.* II., 279.
Tasmania.

Nectria Tasmanica, *Berk. Fl. Tasm.* II., 279.
Tasmania.

ORD. II. **XYLARIACEÆ.**

Gen. 1. **XYLARIA.** *Schr.*

Sect. A. *Xyloglossa.* *Fr.*

Xylaria australis, *Cooke Grevillea* XI., p. 84.
Endeavour River.

Xylaria involuta, *Klotsch. in Linnea.*
N. S. Wales, Daintree River.

Xylaria grammica, *Mont. Syll.*, No. 680.
Endeavour River, Daintree River.

Xylaria ectogramma, *Berk. Linn. Journ.* XIII., 177.
Victoria.

} One species.

Xylaria rhytidophlæa, *Mont. Syll.*, No. 687.
Victoria, Queensland.

Xylaria polymorpha, *Grev. Fl. Ed.* 355.
Queensland, Port Denison, Daintree River, Richmond River,
Bellenden Ker Range, Endeavour River.

Xylaria cerebriformis, *Cooke Grevillea* XI., p. 86.
Endeavour River.

Xylaria lobata, *Cooke Grevillea* XI., p. 86.
Endeavour River.

Xylaria allantoidea, *Berk. Hook. Journ.*, 1839, p. 397.
Endeavour River.

Xylaria phosphorea, *Berk. Linn. Journ.* XIII., p. 177.
Victoria.

Xylaria tuberiformis, *Berk. Fl. N. Zeal.* II., 204.
Bellenden Ker Range.

Xylaria cretacea (*Hypoxylon*, *B. & Br. Linn. Trans.*, 1879, 405).
Queensland.

Sect. B. *Xylocoryne.* *Fr.*

Xylaria corniformis (*Mont.*), *Fr. Summ.*, 381.
Tasmania.

Xylaria aphrodisiaca, *Well. & Curr. Fung. Ang.*, p. 280.
Queensland.

Sect. C. *Xylostyla.* *Fr.*

Xylaria digitata, *Grev. Fl. Edin.*, p. 356.
Clarence River.

Sect. D. *Xylodactyla*. Fr.

Xylaria hypoxylon, *Grev. Fl. Edin.*, p. 355.
Queensland.

Gen. 2. *PORONIA*. Fr.

Poronia punctata, *Fr. Sum. V. Scan.*, 382.
W. Australia, Tasmania.

Poronia œdipus, *Mont. Ann. Sci. Nat.*, 1855.
Queensland, Clarence River.

Poronia pileiformis, *Berk. Hook. Journ.*, 1842.
Queensland.

Gen. 3. *RHOPALOPSIS*. *Cke. Grev.* XI., 93.

Rhopalopsis cetrarioides (*Well. & Curr. Fung. Ang.*, p. 282).
Queensland.

Rhopalopsis Angolense (*Well. & Curr. Fung. Ang.*, p. 282).
Queensland.

Gen. 4. *HYPOXYLON*. Fr.

Hypox. (Daldinia) concentricum, *Grev. Sc. Crypt. Fl.*, t. 324.
Victoria, Tasmania, N. S. Wales, Queensland, S. W. Australia,
Port Denison.

Hypox. (Macroxyton) sclerophæum, *B. & C. Linn. Journ.* XIII., 177.
S. Australia.

Hypox. (Macroxyton) placentaforme, *Berk. & Curt. Cuban Fungi*,
No. 815.
Endeavour River.

Hypox. (Sphæroxylon) coccineum, *Bull. Champ.*, 174.
Tasmania.

Hypox. (Sphæroxylon) argillaceum, *Pers. Syn.*, 10.
Tasmania.

Hypox. (Sphæroxylon) rutilum, *Tul. Carp. Fung.* II., 38.
Queensland.

Hypox. (Sphæroxylon) multiforme, *Fr. Summa. V. S.*, p. 384.
W. Australia, Tasmania.

Hypox. (Clitoxylon) annulatum (*Schwz.*), *Mont. Syll.*, p. 213.
Tasmania.

Hypox. (Placoxylon) hæmatites, *Lev. Grev.* XI., p. 133.
Endeavour River.

Hypox. (Placoxylon) Archeri, *Berk. Fl. Tasm.* II., 280.
Tasmania.

Hypox. (Placoxylon) capnodes, *Berk. Hook. Journ.*, 1845, 72
W. Australia.

Gen. 5. **NUMMULARIA.** *Tul.*

Nummularia Bulliardi, *Tul. Carp. Fung.* II., p. 43.
Tasmania.

Nummularia australis, *Cooke.*

Stroma cortice innascens, erumpens, effusa, determinata, sæpe disciformis, convexa, impolita, atra. Peritheciis subglobosis, parvulis, 1-2 serialibus; ostiolis externis vix visibilis. Ascis cylindraceis. Sporidiis vere polymorphis, aliis fusiformibus (0.21×0.09 mm.) aliis ovatis (0.12×0.08 mm.); aliis intermediis, plerumque magnis fuscis.

On bark. Clarence River (Miss Thornteton).

ORD. III. **DOTHIDIEI.** *Fr.*

Gen. 1. **MELOGRAMMA.** *Fr.*

Melogramma rubricosa, (*Fr. Elench.* II., 63.)
W. Australia, Queensland.

Gen. 2. **DOTHIDEA.** *Fr.*

Dothidea perisporioides, *B. & C. North Am. Fungi*, No. 880.
Victoria, N. S. Wales.

Dothidea graminis, *Pers. Obs.* 1, 18, t. 1, f. 1, 2.

Gen. 3. **RHYTISMA.** *Fr.*

Rhytisma hypoxanthum, *B. & Br. Proc. Linn. Soc. N. S. W.*, v. 39.
Queensland.

ORD. IV. **VALSIÆI.**

Gen. 1. **DIATRYPE.** *Fr.*

Diatrype elevata, *Berk. Hook. Journ.* 1845, 298.
W. Australia. Tasmania.

Gen. 2. **VALSA.** *Fr.*

Valsa echidna, *Cke. Grevillea* IX., 4.
N. S. Wales. Queensland.

Gen. 3. **EUTYPA.** *Tul.*

Eutypa lata, (*Fr.*) *Tul. Carp. Fung.* II., p. 56.
Tasmania.

ORD. V. **SPHÆRIÆI.**

Gen. 1. **CUCURBITARIA.** *Grev.*

Cucurbitaria Archeri, *Berk. Fl. Tasm.* II., 280.

Gen. 2. **GIBBERA.** *Fr.*

Gibbera Saubinetii, *Mont. Fl. Alg.* p. 479.
Tasmania.

Gen. 3. *MASSARIA*. *Fr.*

Massaria australis, *Cke. Grevillea* XIII., 65.
Victoria.

Gen. 4. *LASIOSPHÆRIA*. *Cke.*

Lasiosphæria ovina, (*Pers.*) *Grevillea* VII., 85.
Victoria.

Lasiosphæria pulvinula, *Berk. Hook. Journ. Bot.* 1845, 299.
W. Australia.

Gen. 5. *PSILOSPHÆRIA*. *Cke.*

Psilosphæria inspersa, *Berk. Hook. Journ. Bot.* 1845, 299.
W. Australia.

Psilosphæria Schomburgckii, *Berk. Linn. Journ.* XVIII., 389.
Queensland (?)

Psilosphæria congesta, *Cke.*

Gregaria, conferta, atra. Peritheciis sub-cylindricis, convexis, glabris, poro pertusis. Ascis subclavatis. Sporidiis fusiformibus, triseptatis, leniter constrictis, fuliginis ($\cdot 04 \times \cdot 01$ mm.).

On bark. Twofold Bay.

Gen. 6. *BYSSOSPHÆRIA*. *Cke.*

Byssosphæria byssiseda, *Tode Meck.* II., 10.
Tasmania.

Gen. 7. *MELANOSPORA*. *Corda.*

Melanospora caprina, *Fr. Summ. V. Sc.*, 396.
Tasmania.

Gen. 8. *SPHÆRIA*. *Hill.*

Sphæria polyasca, *B. & Br. Proc. Linn. Soc. N. S. W.* v. 91.
On Bottle Gourd. Queensland.

Gen. 9. *SPHÆRELLA*. *DeNot.*

Sphærella destructiva, *B. & Br. Proc. Linn. Soc. N. S. W.* v. 91.
On *Medicago*. Queensland.

ORD. VI. **PERISPORIÆI.**Gen. 1. *CORYNELIA*. *Fr.*

Corynelia uberata, *Fr. Sys. Myc.* II., 535.

Gen. 2. *MELIOLA*. *Fr.*

Meliola amphitricha, *Fr. Elcn.* II., 109.
Victoria.

Meliola Tetraceræ, *Thum. Sym. Myc. Austr.* II., No. 92.
Queensland.

Gen. 3. **ASTERINA**. *Lev.*

Asterina Baileyi, *B. & Br. Proc. Linn. Soc. N. S. W.* v. 89.
On *Hakea*. Queensland.

Asterina pelliculosa, *Berk. Antarct. Crypt.* p. 137.
Queensland.

Gen. 4. **ANTENNARIA**. *Link.*

Antennaria scoriadea, *Berk. Hook. Journ.* 1845, 70.
W. Australia. Gipps Land.

PYRENO MYCETES INCOMPLETÆ.

ORD. I. **SPHÆRONEMEI.**

Gen. 1. **SPHÆRONEMA**. *Tode.*

Sphæronema rufum, *Fr. Act. Hohn.* 1818, 357.
Tasmania.

Gen. 2. **PHOMA**. *Fr.*

Phoma ampelinum, *B. & C. North Amer. Fungi.* No. 380.
Australia.

Gen. 3. **EXCIPULA**. *Fr.*

Excipula strigosa, *Corda. Icon.* III., f. 78.
W. Australia.

Gen. 4. **GYMNOSPORIUM**. *Corda.*

Gymnosporium inquinans, *Berk. in Welw. Crypt. Lusit.* No. 60.
W. Australia.

Gen. 5. **PHYLLOSTICTA**. *Pers.*

Phyllosticta fragaricola, *Desm. Pl. Crypt.* No. 686.
On strawberry leaves. S. Australia (Crawford).

Phyllosticta circumscissa, *Cke.*

Amphigena. Maculis orbicularibus, rufo-fuscis, demum delapsis. Peritheciis paucis, minutis, innatis. Sporibus ellipticis (0.008×0.002 mm.).

On leaves of apricot and cherry. S. Australia (Crawford).

Very common in South Australia, leaving the leaves perforated with small round holes by the falling away of the spots; hence called the "shot-hole fungus." It is believed to be causing considerable injury to the fruit trees.

CLASSIFICATION OF THE UREDINES.

By M. C. COOKE.

It was not our intention to have made any remarks on the communication at page 116, had we not been challenged to give our reasons for sanctioning the change of specific names there proposed, as if we assumed responsibility. We beg, therefore, at first to observe that we are responsible only for our own communications, and it should not be assumed that we accept the views of our contributors, because we do not rush forward and challenge them. There are one or two points on which we may be permitted to offer an explanation.

The writer in question has adopted the views of Continental authors, as he admits, and is only responsible for his acceptance of them—without conditions—in order “to be in harmony.”

With the barbarous combinations that are employed for the subgenera, we do not intend to occupy space. That “*Euromyces*” should be a sub-genus of “*Uromyces*” we leave to the consciences of Schröter and Co., but classical authorities contend that “*Lepturomyces*” and “*Micruromyces*” as representatives of *Lepto-uromyces* and *Micro-uromyces* is too barbarous, even for botanical “dog-Latin.”

On the general scheme of classification we have no strictures to offer, except such as concern what are called the heterœcismal species, and on this point we have already spoken.

As to the proposed changes in old and well established specific names we must protest.

I.—Because the changes are wholly unnecessary. These names have been in use many years, are thoroughly well known, are open to no plausible objection, and answer all the purposes of science. Only sentimental reasons can be offered for the changes, and not practical ones. Everyone is well enough satisfied with *Puccinia anemones* and only theorists—not practical men—desire to change it and add another synonym to the list. To the law and to the testimony “Next in importance is the avoidance of any useless introduction of new names.” *Laws of Botanical Nomenclature*. Cap. I., Art. 3.

II.—Because the proposed changes are in opposition to the principles of Botanical nomenclature. If it were desired at all to go behind an accepted name, that name must clearly belong to the same specific plant. *Puccinia flosculosorum* A. & S. for instance, which is proposed to be substituted for *P. compositarum*, Schl. What is gained but confusion by the change? There is no such species as *Puccinia flosculosorum* in Alb. & Schw. or any having correspondence with the same specific plant. *Uredo flosculosorum*, Alb. & Schw. was an *Uredo*, with simple ovate spores. No one who reads the description would dream of applying it to a *Puccinia*. There was no such species known to Alb. & Schw. as *Puccinia flosculosorum*, and therefore the name cannot be applied to it—as

the species of Alb. & Schw. It is useless to argue that the *Uredo* of Alb. & Schw. was an imperfect state of *Puccinia compositarum*, because in that case it becomes only a dropt name, representing only a part of the plant, and cannot be applied to a condition subsequently discovered, and wholly unknown to the authors.

The principles of Botanical nomenclature would authorize us not to go further back than *Puccinia* for a specific name, unless to some previous genus which recognized the salient features of the genus *Puccinia*.

"Nobody is authorized to change a name because it is badly chosen or disagreeable, or another is preferable or better known, or for any other motive, either contestable, or of little import." *Laws of Bot. Nom. Sect. vi., Art. 59.*

"Every author who has limited a species somewhat otherwise than his predecessors, so as to exclude, or include a form more or a form less, may be considered to have *destroyed* the ancient species, and to have *created another*, under the same name." *Commentary on Laws, p. 64.*

Plowright then, under the name of *Puccinia flosculosorum* destroys the old species of *Uredo flosculosorum*, A. & S., by adding other forms, and creates another species under the same name, *Puccinia flosculosorum*, Plowright. But, as there is already a name current for the same species, *Puccinia compositarum*, Schl., which has priority, therefore the new name cannot be adopted.

"Publishing a name that cannot be adopted is uselessly throwing a synonym into circulation." *Commentary on Laws, p. 51.*

III.—Because, in some instances, the changes are opposed to the law of priority. Take the proposed *Puccinia tragopogi*, Pers., substituted for *Puccinia sparsa*, Cooke. There is no such species as *Puccinia tragopogi*, Pers., only *Æcidium Tragopogi*, Pers., and the diagnosis of this species will not apply to *Puccinia* at all. Even if it were permitted to take the specific name from Persoon in one genus, and apply it in another, it could not stand as *Puccinia Tragopogi*, Pers., because it implies more than Persoon intended, but it must appear as *Puccinia Tragopogi* (Pers.), Plow. Here we encounter another difficulty, because the law of priority gives the name of *Puccinia Tragopogonis* to Corda. (*Icon.*, 1842), and this cannot be superseded by a later name, that of *Puccinia Tragopogi*, Plow. They are *not* the same species, because *P. Tragopogonis*, Corda, has smooth spores, whilst that called *P. Tragopogi*, Plow., has rough spores. The names are too similar to be permitted together in the same genus.

"Avoid in the same genus names too similar in form—above all, those that only differ in their last letters." *Laws of Bot. Nom., Cap. iii., Art. 36.*

We might proceed through the whole series in a like manner, but we forbear, and will rest content with this protest against unsettling specific nomenclature, on such insufficient grounds, in order that we may be *in harmony* with those who have done wrong elsewhere, whether Teutons or Titans.

ILLUSTRATIONS OF BRITISH FUNGI.

With the eighteenth part, shortly to be published, the first section of the "Illustrations" will be completed. This will contain 292 plates of the *Leucospori* division of the genus *Agaricus*, and will form two volumes, with an analytical systematic Index. A few species that have been recorded as British will be found omitted, as it was impossible to obtain drawings of them. The following is a list of the deficiencies:—

Agaricus (Lepiota) cinnabarinus var. *Terrei*, B. & Br. This variety was figured by W. G. Smith in his "Illustrations," and we have no knowledge of its having been found since.

Agaricus (Armillaria) aurantius, Schæff. This species is said to have been once found in Scotland, and was figured at the time by W. G. Smith, from the Scotch specimens. This figure we produced on Plate 33, but it is certainly not the true *Agaricus aurantius*, Schæff. So that, for the present, we must consider the species as doubtfully British.

Agaricus (Tricholoma) auratus, Fr., seems to be doubtfully British.

Agaricus (Tricholoma) pessundatus, Fr. All the specimens or figures which we have yet seen of British individuals under this name are referable either to *Ag. stans* or *Ag. imbricatus*.

Agaricus (Tricholoma) loricatus, Fr. Of this we have seen no fresh specimens, and have at present no drawing. It is figured by Fries in his "Icones."

Agaricus (Tricholoma) civilis, Fr. The same remark applies to this species.

Agaricus (Clitocybe) gangrenosus, Fr., and its variety *nigrescens*, Lasch. The only drawings we have seen cannot belong to the genuine species, and we have found nothing which answers to the description by Fries. We are not aware that it has ever been figured.

Agaricus (Clitocybe) amarella, Fr. The specimens found and recorded under this name do not correspond with the figure submitted to Fries by Dr. Quelet. It is therefore doubtfully British.

Agaricus (Clitocybe) subalutaceus, Batsch. We have been unable to obtain drawings of this species.

Agaricus (Clitocybe) polius, Fr. This seems to be doubtfully British, as far as we can ascertain.

Agaricus (Clitocybe) cryptarum, Letell. We do not know this species, and have no drawing of the specimens referred to it.

Agaricus (*Clitocybe*) *infundibuliformis*, variety *membranaceus*, Fr., was figured in W. G. Smith's "Illustrations." We have no other drawings.

Agaricus (*Clitocybe*) *trullæformis*, Fr. We have no drawing of British specimens.

Agaricus (*Clitocybe*) *concurvus*, Fr.

Agaricus (*Clitocybe*) *pausicus*, Fr. The same observation applies to these two species.

Agaricus (*Collybia*) *racemosus*, P. The drawings of this species made by Rev. M. J. Berkeley have been mislaid.

Agaricus (*Collybia*) *extuberans*, Fr. We have been unable to secure drawings of British specimens.

Agaricus (*Collybia*) *ozes*, Fr. Unfortunately the only specimens found in this country were not drawn at the time. It has never been figured.

Agaricus (*Collybia*) *murinus*, Batsch. This is unknown to us, and we have seen no figure of British specimens.

Agaricus (*Mycena*) *aurantio-marginatus*, Fr. We have no figure of this species.

Agaricus (*Mycena*) *atro-albus*, Bolt. We only know this species from Bolton's figure.

Agaricus (*Mycena*) *peltatus*, Fr. We have not seen this singular species.

Agaricus (*Mycena*) *mirabilis*, C. & Q. It seems to be doubtful whether this differs from *Ag. iris*, B. & Br.

Agaricus (*Omphalia*) *umbilicatus*, Schæff.

Agaricus (*Omphalia*) *chrysophyllus*, Fr.

Agaricus (*Omphalia*) *glaucophyllus*, Lasch.

Agaricus (*Omphalia*) *rusticus*, Fr.

Agaricus (*Omphalia*) *infumatus*, B. & Br.

Agaricus (*Pleurotus*) *pulmonarius*, Fr.

Of all these species we have no figures, but should any of them be secured hereafter, they will be published, with any additions, as an appendix, at the end of the genus *Agaricus*.

It has been suggested that a reprint of the descriptions of *all* the British species would be desirable, to accompany these plates. The subject is having serious consideration, and will doubtless be adopted.

The pink spored Agarics will be proceeded with at once on the completion of the two volumes of white-spored species. A few vacancies in the list of subscribers, on account of deaths, may be filled up with the commencement of the third volume.

M. C. COOKE.

NEW BRITISH FUNGI.

BY M. C. COOKE.

Agaricus (Collybia) psathyroides, Cooke. *Illus. t.* 266.

Ivory-white. Pileus campanulate, obtuse, rather viscid, margin regular, even; stem erect, slender, hollow, equal, rather tough. Gills very broad, triangular, adnate with a decurrent tooth, rather distant, persistently white. Spores elliptic, colourless. $\cdot 015 \times \cdot 007$ mm. On the ground. Epping Forest.

Pileus $\frac{3}{4}$ inch broad, nearly an inch high; stem 3-4 inches long, slender. Allied to *Ag. Stevensoni*, B. & Br. Wholly white. Resembling in habit some *Psathyra* or *Panæolus*, but the spores are absolutely colourless when fully mature.

Agaricus (Omphalia) cæspitosus, Bolton, *t.* 41.

Pileus submembranaceous, convex, subhemispherical, umbilicate, ochrey white, margin crenate, sulcate nearly to the top, smooth; stem curved, fistulose, slightly bulbous at the base; gills distant, rather broad, shortly decurrent, whitish.—Cooke *Illustrations*, *t.* 209, *f.* B. On banks near King's Lynn (C. B. P.).

This species has been confounded with *Ag. oniscus*, Fr., both in the "Handbook," and by Fries himself. It is exactly the plant figured in the English edition of Bolton, but the German reprint is coloured quite differently. The colour is entirely of a delicate ochraceous white.

Agaricus (Pleurotus) acerinus, Fr. *Hym. Eur.* 175.

White, tough, pileus fleshy, thin, unequal, clad with silky fibrils; stem rather lateral, thin, or obsolete villous. Gills decurrent, much crowded, thin, white, then becoming yellowish.

On trunks. Epping Forest (*W. G. Smith*).

Pileus 1-4 inches broad, not hygrophanous. By some oversight this species has not been recorded as British. An excellent figure by Mr. Worthington Smith is in the British Museum.

Thecaphora Trailii, Cooke.

Developed in the florets, purplish-brown, pulverulent. Spores globose, usually in fours, rarely 2 or 3, compressed on the inner face; epispore finely verruculose. $\cdot 012\text{--}\cdot 014$ mm. diam.

On *Carduus heterophyllus*. Scotland (*Professor J. W. H. Trail*).

Having very much the habit and appearance of *Ustilago Cardui*, but differs in being a true *Thecaphora*, and in the epispore being verrucose and not reticulate.

Ramularia Cochleariæ, Cke.

Epiphylla, orbicularis, alba. Maculis pallidis. Sporis elongato-cylindricis, rotundatis, continnis, hyalinis. $0.025\text{--}0.028 \times 0.0035$ mm.

On leaves of *Cochlearia officinalis*. Banks of Don (*Prof. Trail*).

Cylindrosporium niveum, B. & Br.

The species described as *Cercospora Calthæ*, in "Grevillea," p. 72, should be referred to the above.

CRYPTOGAMIC LITERATURE.

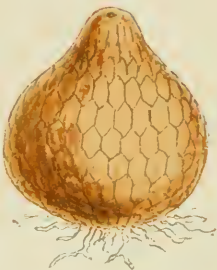
- GOSSEL and WENDISCH. Zeitschrift für pilzfrende, Nos. 1-3.
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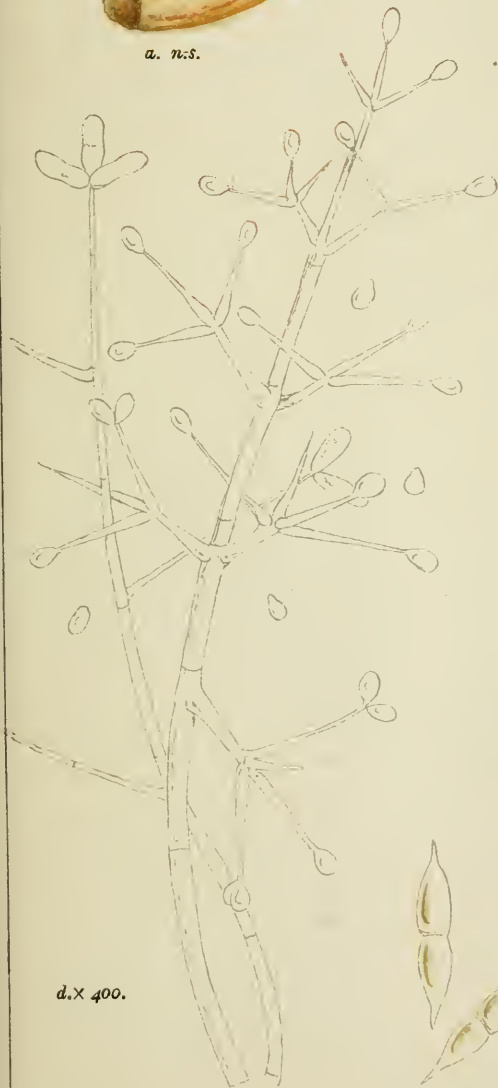
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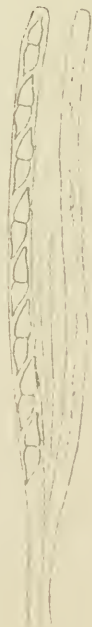
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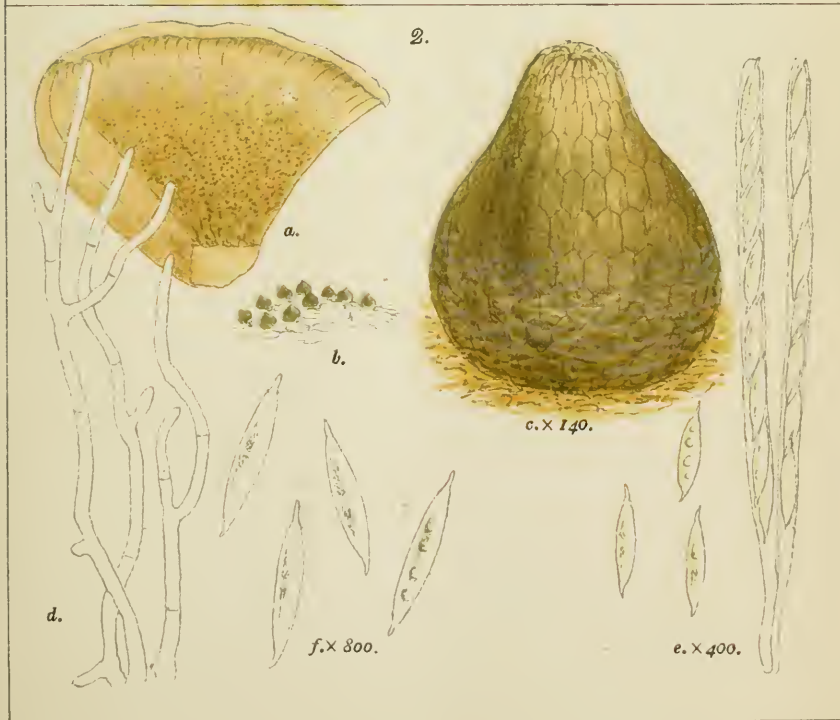
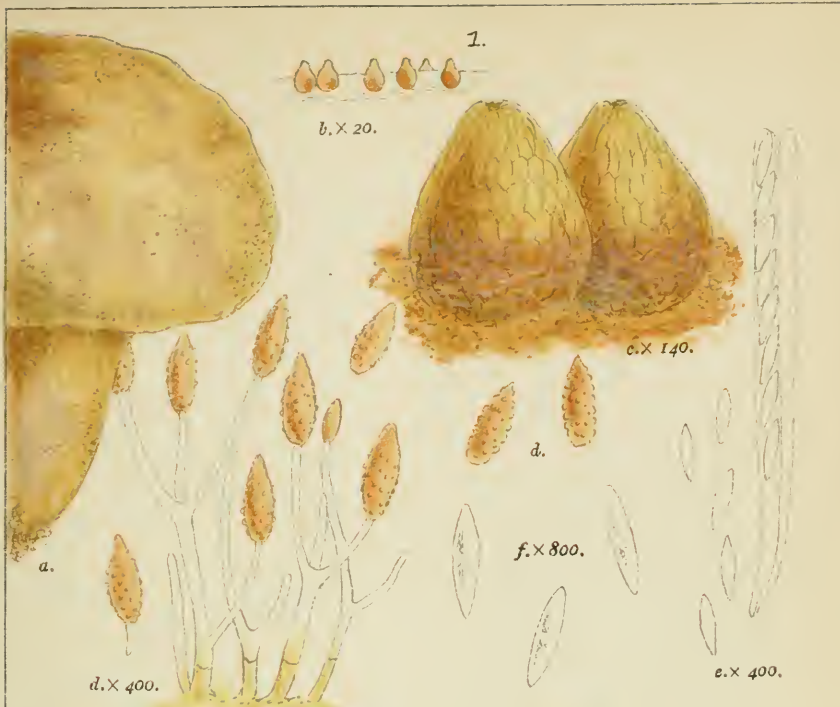


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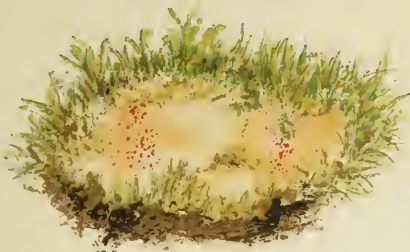
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1. *Hypomyces Tulasneanus*. Cke. & Pl.

2. *Hypomyces luteo-virens*. Fr.



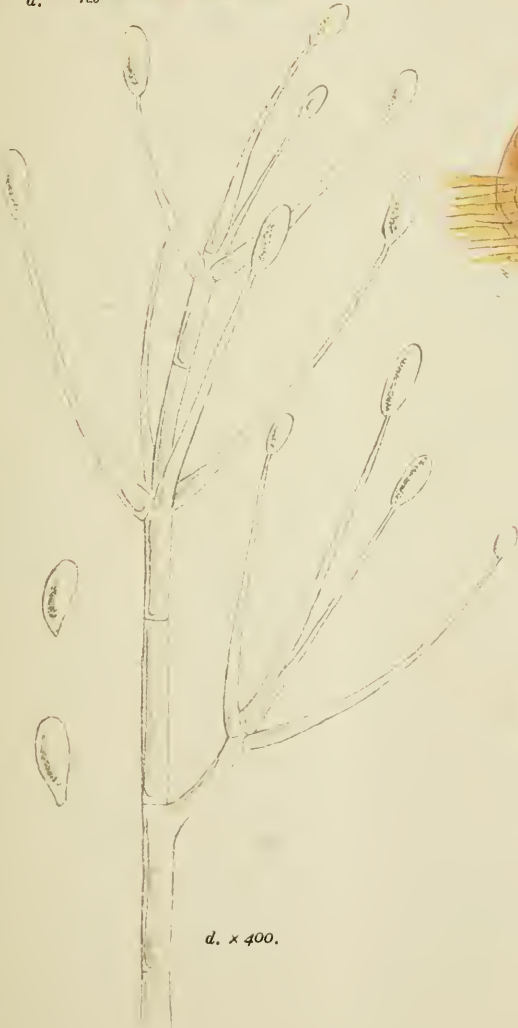
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b.



c. x 100



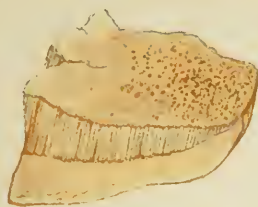
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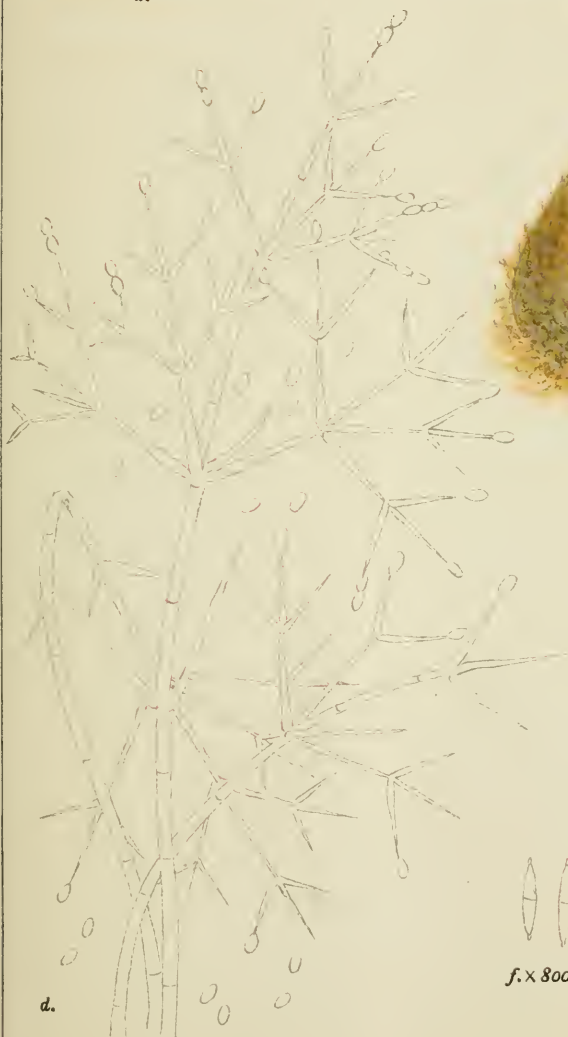
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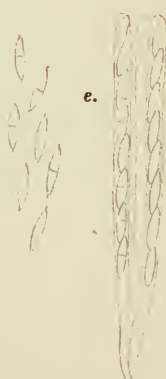
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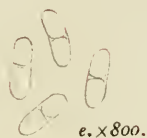
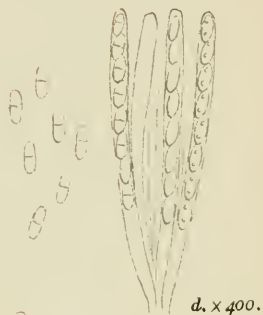
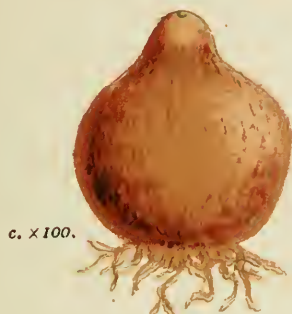
e.



f. x 800.

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1.



Hypomyces Berkeleyanus. C & P.

2.



3.

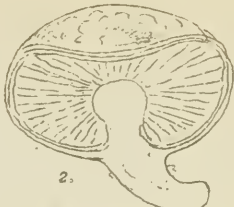


Hypomyces cervinus. Tul.

Hypomyces Linkii. Tul.



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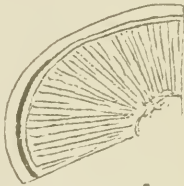
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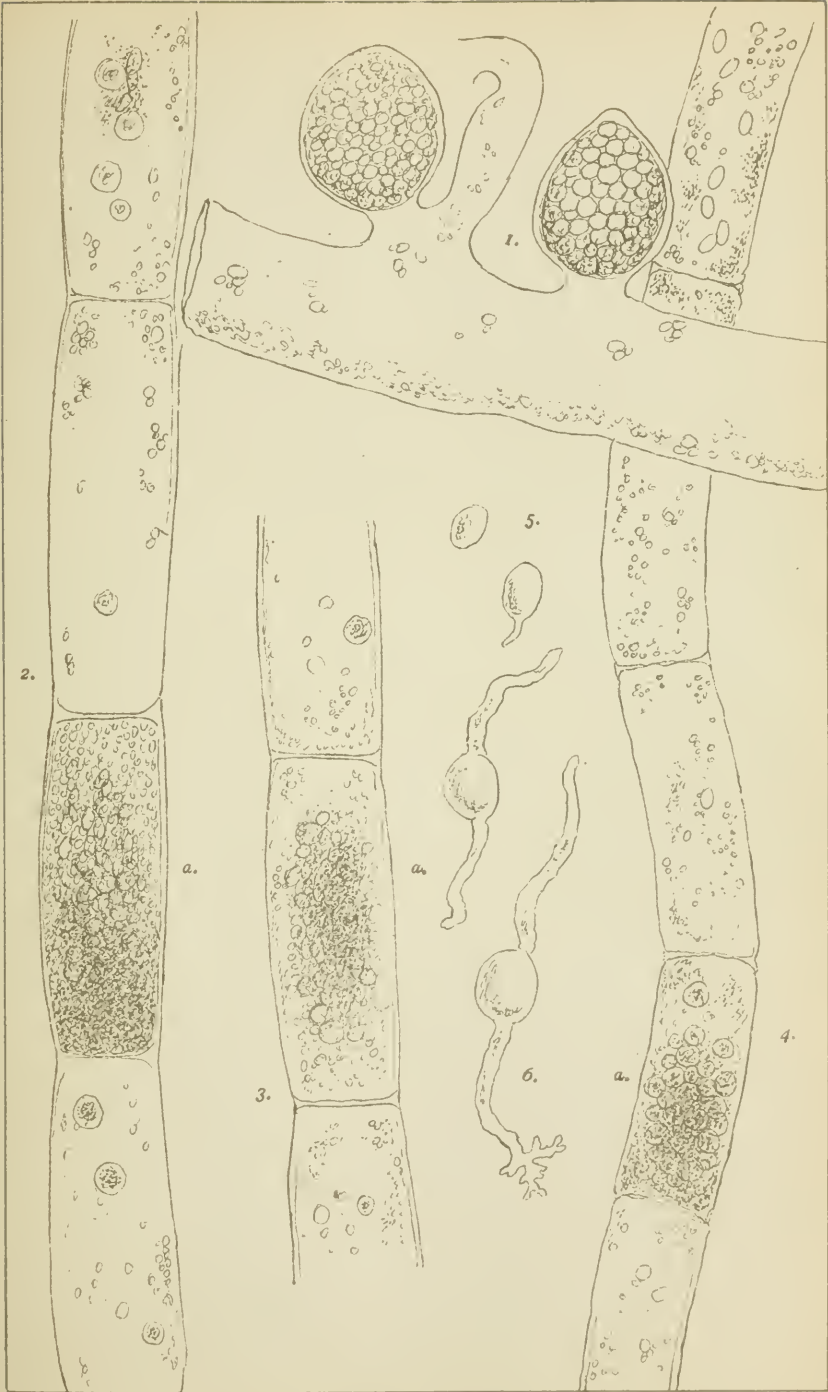
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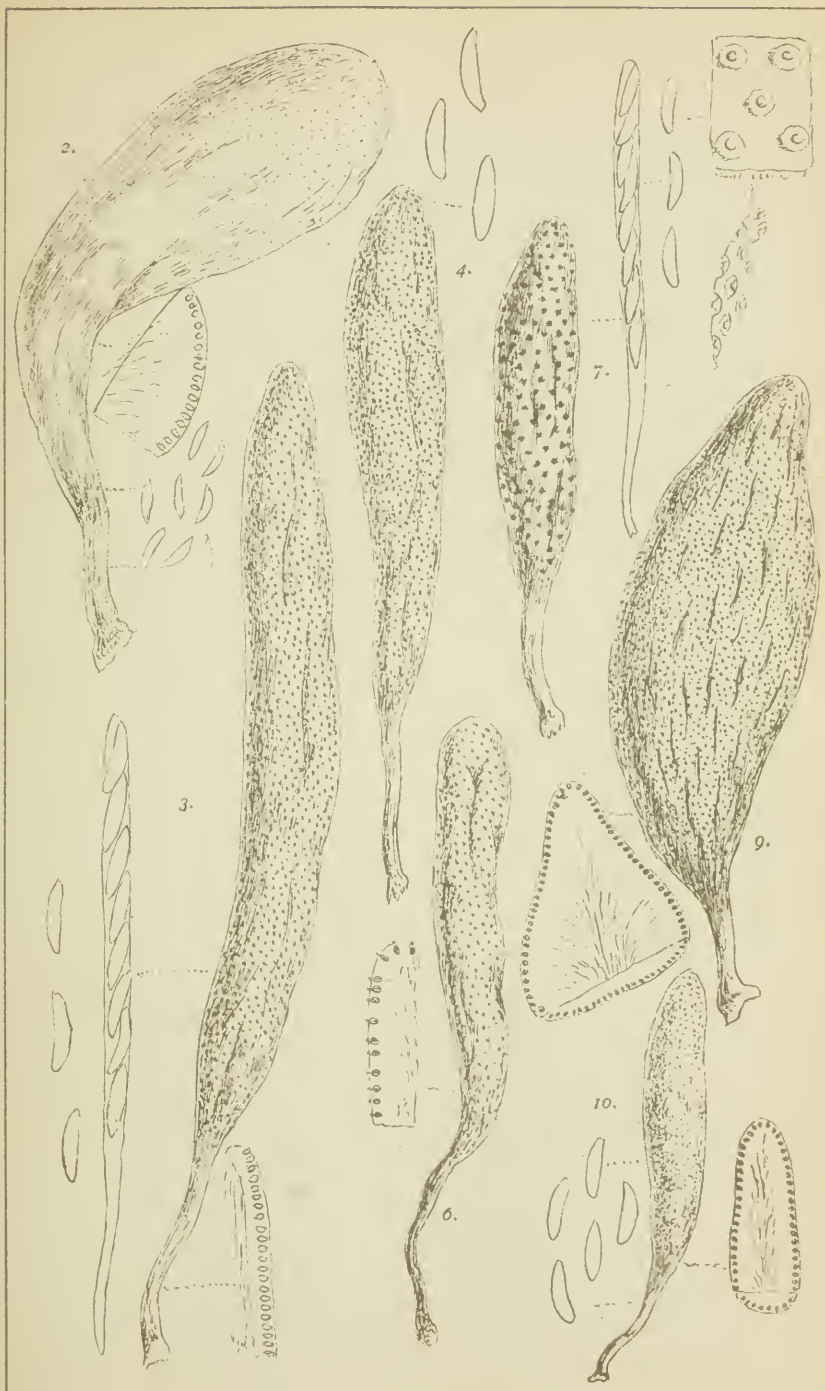


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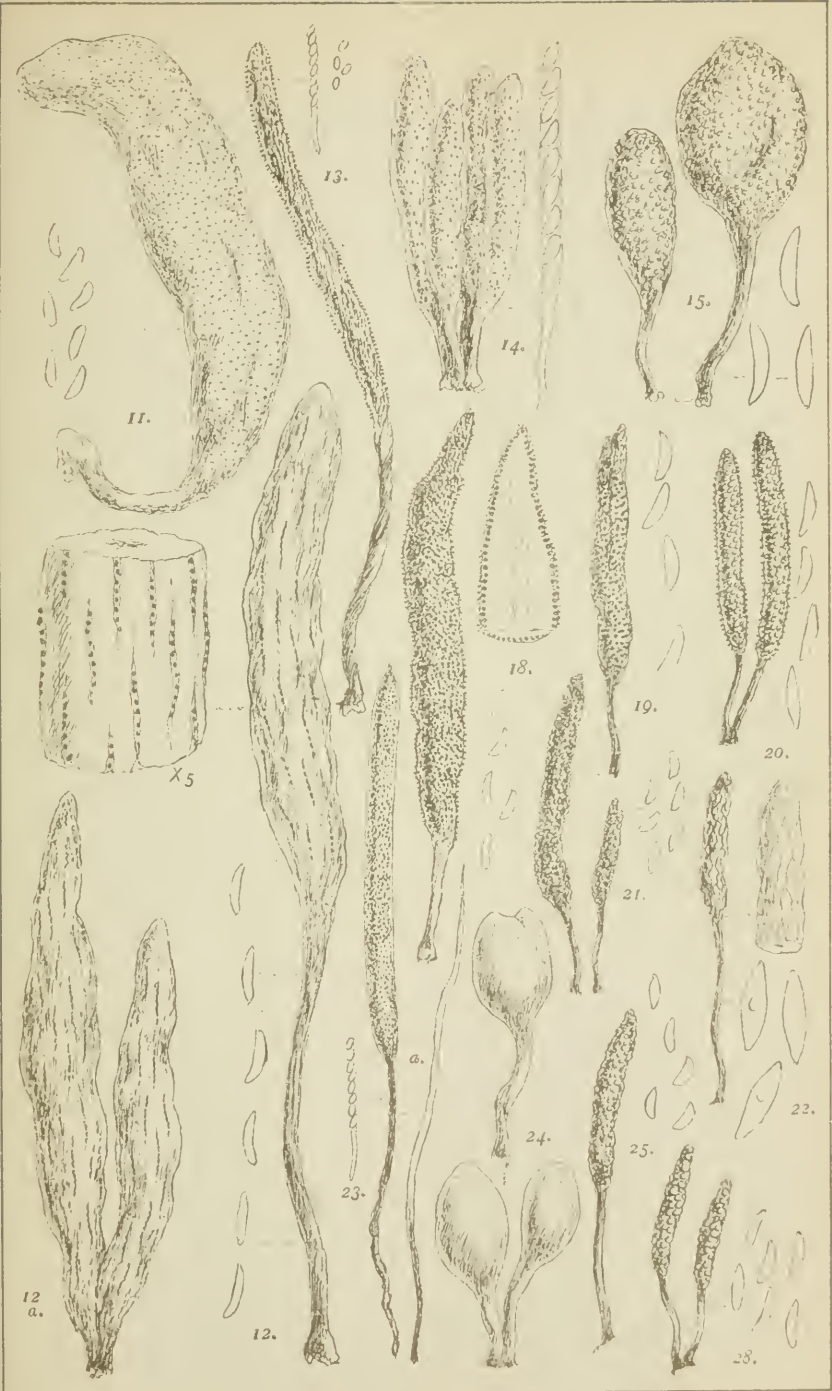


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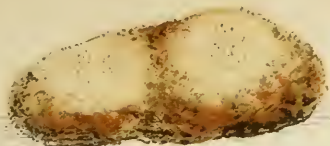




XYLARIA.—*Xyloglossa*.



1.



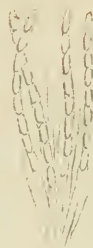
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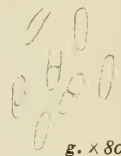
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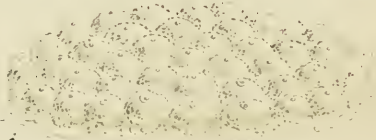
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Hypomyces violaceus. Tul.

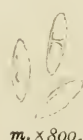
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h n.s.



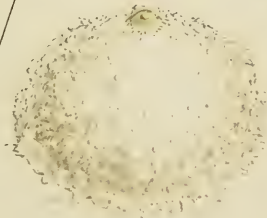
i.



m. x 800.



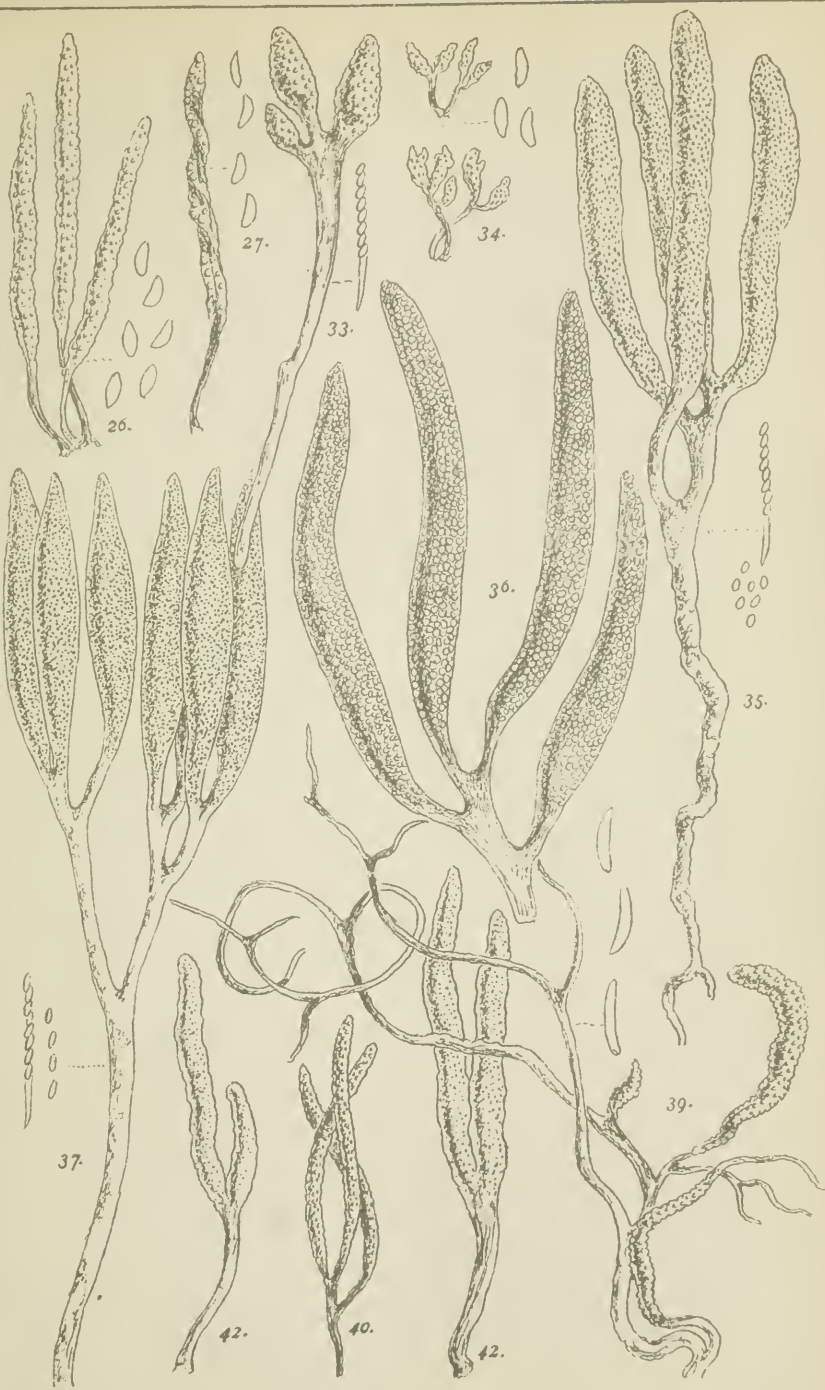
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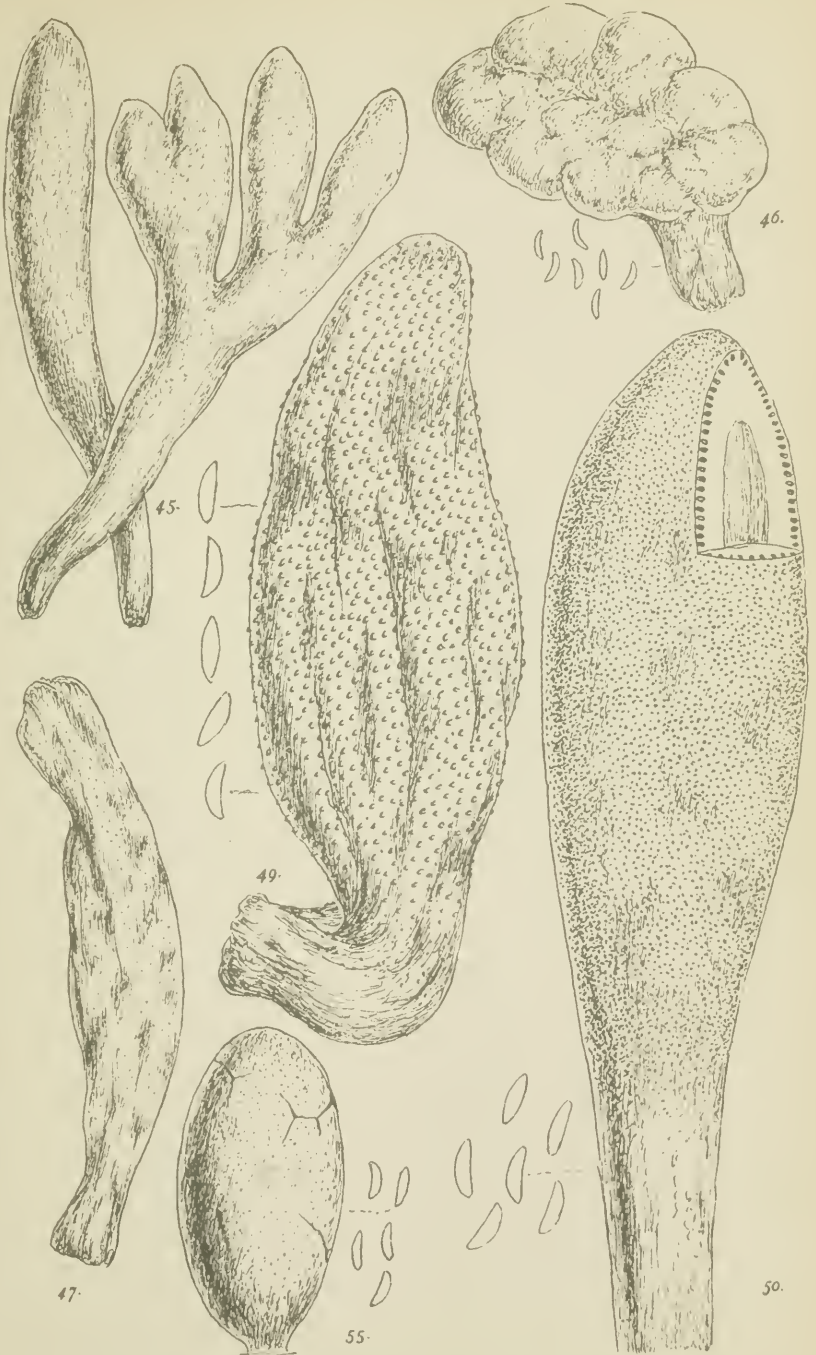


k. x 80

d. x 400.

Hypomyces candicans. Plow.





XYLARIA-*Xyloglossa*.

Grevillea,

A QUARTERLY RECORD OF

CRYPTOGAMIC BOTANY

AND ITS LITERATURE.

EDITED BY M. C. COOKE, M.A., A.L.S.,

*Author of "Handbook of British Fungi," "Fungi, their uses," &c.,
"Rust, Smut, Mildew, and Mould," &c., &c.*

VOL. XII.

1883-84.

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INDEX TO VOL. XII.

	PAGE
Additions to British Cladonieï	91
Æcidium Bellidis	86
Algæ, British Fresh Water	101, 114
Alkaloids and other substances in Fungi	44
Anthostoma, the Genus... ..	49
Australian Fungi	8
British Cladonieï, additions to... ..	91
British Fresh Water Algæ	101, 114
British Fungi, Illustrations	53
Classification of Uredines	36
Cooke, M. C., American Fungi... ..	22, 92
" " Australian Fungi	8
" " Exotic Fungi	37, 85
" " New British Fungi	36, 41, 66, 98
" " on Anthostoma	49
" " on Hypocreaceæ... ..	77, 100
" " on Nummularia	1
Cooke and Harkness, New Californian Fungi	92
Crombie, J. M., British Cladonieï, additions to	91
" " New British Lichens	89
" " Withering's Lichens	56, 70
Cryptogamic Literature... ..	39, 63, 87, 114
Desmids of United States	114
Flora of British Fungi	97
Fungi, Alkaloids, &c., extracted from... ..	44
" Australian	8
" from Perak	84
" New American	22, 92
" New British	36, 41, 66, 98
" New Californian	83, 92
" some Exotic	37
Fungus Forays, 1883	54
Fungus Foray in Ireland	86
Harkness, H. W., and Cooke, New Californian Fungi	92
Hypocreaceæ, Notes on	77, 100
Illustrations of British Fungi... ..	53
Lett, H. W., Fungus Foray	86
Lichens in Withering's Herbarium	56, 70
Lichens, New British	89
Lycoperdon giganteum	97
New American Fungi	22, 92
New British Fungi	36, 41, 66, 98
New British Lichens	89

	PAGE
New Californian Fungi...	83, 92
Notes on Hypocreaceæ ...	77, 100
Nummularia and its Allies ...	1
Oidium Tuckeri ...	84
Phycologia Mediterranea ...	53
Plowright, C. P., Classification of Uredines ...	36
" " on <i>Æcidium Bellidis</i> ...	86
Real Yankee Puff-Ball ...	97
Saccardo's Sylloge Fungorum ...	34
Sirosiphon saxicola ...	76
Some Exotic Fungi ...	37, 85
Spirogyra orthospira ...	63
Stewart, C. G., Alkaloids, &c., in Fungi ...	44
Synopsis Pyrenomycetum ...	102
Uredines, Classification of ...	36
Woolhope Fungus Foray, 1884...	97

APPENDIX, containing revision of the Hymenomycetes in "Cooke's Handbook of British Fungi," paged separately 1 to 48.

Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY
AND ITS LITERATURE.

NUMMULARIA AND ITS ALLIES.

By M. C. COOKE.

The following observations are in continuation of those on *Xylaria* (Vol. xi., p. 81), and *Hypoxyylon* (Vol. xi., p. 121), to which, in the first place, these additions and corrections will have to be made :—

XYLARIA.

a. XYLOGLOSSA. Sect. b.

53a. *Xylaria cynoglossa*, Cke.

Umbrina, linguæformis (5-6 unc. longa $1\frac{3}{4}$ unc. crassa), brevissime stipitata, carne albo. Peritheciis congestis, cylindricis, atris, ostiolis leniter papillatis, atris. Ascis cylindraceis. Sporidiis arcte fusiformibus, rectis curvulisve, fuscis ($\cdot 016\text{--}\cdot 018 \times \cdot 004$ mm.).

On wood. Tweed River (R. Fitzgerald).

62a. *Xylaria Thwaitesii*, Berk. & Cooke in *Herb. Berk.*, 8473a.

Suberosa, cylindrica, rigida, fragilis, obtusa, demum cava (1-2 in. $\times \frac{1}{4}$ unc.) Stipite brevi vel obsoleto, subcrasso, glabro. Peritheciis carbonaceis, subglobosis, mediis, ostiolis haud papillatis. Ascis cylindricis. Sporidiis fusiformibus, rectis curvulisve, fuscis ($\cdot 015\text{--}\cdot 018 \times \cdot 005$ mm.).

On wood. Ceylon.

Allied to *X. fistulosa*, Lev., but externally quite smooth. Sporidia broader.

c. Capitulum subglobose.

79a. *Xylaria cretacea*, Berk. & Br. *Linn. Trans.* Ser. 2, Vol. i., p. 405.

Magnum (1-1 $\frac{1}{2}$ unc. alt.) Subglobosum, stipitatum, e candido albidum, subrugosum, lineis tenuibus fuscis reticulatum, ostiolis nigris, minute punctatis, intus stratis ligneis fragilibus e stipite radiantibus formatum; perithecia oblonga, nigra, ostiolis vix prominentibus munita; sporidia oblonga, brunnea, continua, finibus acutis, $\cdot 035\text{--}\cdot 045 \times \cdot 013\text{--}\cdot 02$ mm. *Hypoxyylon cretaceum*, Berk. & Br.

Brisbane, Australia.

85a. **Xylaria glebulosum**, *Ces.* 1494.

d. Capitulum depressed, peltate.

90a. **Xylaria frustulosa**, *B. & C.* 1534.

90b. „ **pauillum**, *Ces.* 1375.

90c. „ **Berterii**, *Mont.* 1395.

90d. „ **Natalensis**. *Berk. in Herb.* Sporidia not developed.

RHOPALOPSIS.

In this genus, as proposed (Vol. xi., p. 93), some additional details are required.

a. Stroma simple.

1. **Rhopalopsis cænopus**, (*Mont.*) No. 1488.

Sporidia lanceolate, $\cdot 04\text{--}\cdot 045 \times \cdot 009$ mm.

2. **Rhopalopsis aggregatum**, (*W. & C.*) 1427.

3. **Rhopalopsis Angolense**, (*W. & C.*) 1519.

Sporidia $\cdot 012\text{--}\cdot 015$ mm. long.

4. **Rhopalopsis clavus**, (*Fr.*)

Sporidia lanceolate, $\cdot 04 \times \cdot 01$ mm.

5. **Rhopalopsis confusum**, *Berk. & Cooke.*

Gregarium, stipitatum, simplex. Capitulis globoso-depressis, glaucis, demum nigris, in stipitem flexuosam attenuatis; peritheciis innatis, globosis, ostiolis punctiformibus. Ascis sporidiisque (?).
On wood. Brazil.

6. **Rhopalopsis micropus**, (*Berk.*) 1491.

Sporidia $\cdot 03\text{--}\cdot 038 \times \cdot 009\text{--}\cdot 012$ mm.

7. **Rhopalopsis congestum**, (*B. & Br.*) 1402.

Sporidia $\cdot 015\text{--}\cdot 017 \times \cdot 013\text{--}\cdot 015$ mm.

8. **Rhopalopsis Berkeleyanum**, *Cooke. (Hypoxylon cænopus, var. Berk.)*

Cæspites suborbicularis (1-2 unc. lat.). Stromatibus clavatis, stipitatis, superne applanatis, dense congestis, atris, opacis, simplicibus, rarissime confluentibus, stipite brevi, ruguloso, infra attenuatis. Peritheciis minutis, numerosissimis, compressis, prominulis. Ascis cylindræcis. Sporidiis ellipticis, inæquilateralibus, continuis, fuscis, $\cdot 008\text{--}\cdot 01 \times \cdot 004$ mm.

On bark. Brazil (Glaziou, 8542, 8543). Ceylon (No. 60).

Although resembling *R. cænopus* in habit, easily distinguished by the very much smaller perithecia, and different sporidia.

b. Stroma multipartite.

9. **Rhopalopsis cetrarioides**, (*W. & C.*) 1489.

Sporidia lanceolate.

10. **Rhopalopsis lichenoides**, (*Berk.*)

Sporidiis lanceolatis, $\cdot 035 \times \cdot 008$ mm.

11. **Rhopalopsis Puiggarii**, (*Speg.*) 1232.

12. **Rhopalopsis contracta**, (*Speg.*) 1233.

13. **Rhopalopsis Kurziana**, (*Curr.*) *Xylaria Kurziana*. *Curr. Linn. Trans.*, Vol. i., p. 129.

Solitaria vel cæspitosa, vel etiam connata ($\frac{1}{4}$ -1 unc. long). Capite castaneo subhemispherico; peritheciis prominentibus scabro, sporidiis nigro-fuscis amygdaloideis (·016-·017 mm. long).

On the ground. Calcutta.

14. **Rhopalopsis microcephala**, (*Mont.*) 1256.

- 15 **Rhopalopsis xylarioides**, (*Speg.*) 1490.

CAMILLEA.

The species of *Camillea* will stand as follows:—

a. Stroma elongated.

1. *Camillea Leprieurii*, *Mont.* 1314.
2. „ *bacillum*, *Mont.* 1315.
3. „ *mucronata*, *Mont.* 1318.

b. Stroma abbreviated.

4. *Camillea cyclops*, *Mont.* 1316.
5. „ *labellum*, *Mont.* 1317.
6. „ *Javanica*, *Mont.* MSS.
7. „ *macromphala*, (*Mont.*) 1412.
8. „ *Surinamensis*, *B. & C.* 1319.

USTULINA.

We venture to add three species to this genus, of which one is undescribed. There appears to be little doubt that the *Hypoxyylon pavimentosum*, Ces., is really an *Ustulina*, and we do not hesitate to add *Sphaeria tuberiformis*, Wallr., although we have seen no authentic specimen. It is also possible that *Sphaeria teres*, Schw., may belong to this genus, but the hollow bullate stroma, in the specimens we have seen, might result from age or attacks of insects, hence we prefer to leave it in *Hypoxyylon*.

Ustulina tessulata, (*Hypoxyylon tessulatum*, Berk. in *Herb.*, No. 8550.)

Stromate superficiali, pulvinato-lobato, undulato, maximo, crasso, tessulato-ruguloso, atro-fuligineo, intus demum excavato, peritheciis compressis, stipatis, monostichis, periphericis, ostiolis punctiformibus. Ascis cylindricis. Sporidiis lanceolatis, magnis, fuscis (·04-·05 × ·008-·009 mm.).

On wood. Bombay.

1. *Ustulina vulgaris*, *Tul.* 1328.
2. *Ustulina Brasiliensis*, *Speg.* 1329.
3. *Ustulina macrosperma*, *Mont.* 1330.
4. *Ustulina zonata*, (*Lev.*) 1331.
5. *Ustulina tessulata*, *Berk.*
6. *Ustulina pavimentosa*, (*Ces.*) 1374.
7. *Ustulina tuberiformis*, (*Wallr.*) 1428.

NUMMULARIA.

Bearing in mind the salient features of the genus *Nummularia*, as already given, "Stroma disc shaped, or cup shaped, adnate, marginate," we are compelled to dispute the position of one or two species which have been introduced into it. *Nummularia punctulata*, Sacc. is *Diatrype punctulata* Berk. and Rav. and the most unlike a *Nummularia* that could possibly be found. The stroma is neither "disc-shaped" nor "cup-shaped," and extends for many inches after the manner of *Diatrype stigma*. Indeed it compels one to inquire what is the use of the diagnosis of a genus at all, if it is to be utterly set at defiance. *Nummularia punctulata* is plainly and distinctly an effused *Hypoxyylon*, and nothing but casuistry can make anything else of it.

Nummularia Wrightii Sacc. exhibits a similar error in an opposite direction. This *Hypoxyylon Wrightii* B. & C., is simply a large, nearly globose, *Hypoxyylon*, neither "disc shaped" nor "cup shaped" but almost as globose as the ordinary form of *Daldinia concentricum*. It cannot be justified as a *Nummularia*.

Next we have two peculiar forms of *Hypoxyylon*, included in *Nummularia* which have certainly no affinity with what is considered usually to be the type form of *Nummularia*. These are *N. placentiformis*, and *N. sub-orbicularis*, and if they are to be regarded as good species of *Nummularia*, then there must be associated with them *Xylaria cerebrina*, *Hypoxyylon Petersii* and *Hypoxyylon Broomeanum*. The latter more resembling *Nummularia* than any of the species included within it, to which we have taken exception. With all deference to Professor Saccardo, after having seen about twenty specimens of *Hypoxyylon sub-orbicularis* Curr. of various forms and dimensions, we cannot recognise in it a resemblance to *Nummularia* with its "disc shaped," or "cup shaped" stroma. At any rate it is a close ally of such species as we have named in conjunction with it.

Again if *Hypoxyylon glycyrrhiza* B. & C. is relegated to *Nummularia*, a dozen species, with precisely the same form, must follow it. Either all sub-discoid forms, that are plano-convex in section, must go with it, into *Nummularia*, or it must retire to *Hypoxyylon*.

We do not by any means dispute the right of these species, such as we have in view, to a place in *Nummularia*, but we contend that one species alone cannot be accepted and the residue excluded. Another feature in support of their relationship to *Nummularia* is the sterile margin of the stroma. If accepted as *Nummulariæ*, then the genus should be sub-divided into two sections, with *Nummularia discreta* and its immediate allies as the type of one section and *Nummularia Bulliardii* of the other. In accordance with these views we have suggested a re-arrangement of the genus.

Space will not permit of our criticizing the species in detail, but we cannot forbear to point out that the *Sphaeria clypeus* of

Schweinitz cannot be synonymous with *Nummularia Bulliardi*, to which it is referred.

MEASUREMENTS.—

Nummularia discreta, Tul. (1529).

We have seen no specimens in which the sporidia approximate to $\cdot 015\text{--}\cdot 018\text{mm}$. The usual dimensions we have recorded are $\cdot 013 \times \cdot 01\text{ mm}$.

Nummularia obularia, (Fr.) (1540).

Sporidia $\cdot 008 \times \cdot 003\text{ mm}$.

Nummularia clypeus, Schwz. (1524).

Sporidia $\cdot 020\text{--}\cdot 021 \times \cdot 008\text{--}\cdot 01\text{ mm}$.

Nummularia gigas, Plow. (1531).

Our measurements certainly do not exceed $\cdot 006\text{--}\cdot 007 \times \cdot 003\text{ mm}$.

EMENDATIONS.—The following species will have to be excluded from this genus:—

1532. *Nummularia frustulosa* (B. & C.), Sacc.

Will be *Xylaria frustulosa* (B. & C.)

1533. *Nummularia Wrightii* (B. & C.)

Must stand as *Hypoxyylon Wrightii*, B. & C.

1534. *Nummularia punctulata* (B. & Rav.)

Must remain as *Hypoxyylon punctulatum*, B. & Rav.

1535. *Nummularia placentiformis* (B. & C.)

Will still be *Hypoxyylon placentiforme*, B. & C.

1536. *Nummularia suborbicularis* (W. & Curr.)

Remains as *Hypoxyylon suborbiculare*, W. & C.

1542. *Nummularia spondylina* (Fr.)

From the specimens we have seen this has no affinity with the present genus, and is therefore *Hypoxyylon spondylinum*, Fr.

1544. *Nummularia Artemisiæ* (Schw.)

Is a *Dothidea* with tetrasporous asci and uniseptate brown sporidia $\cdot 016 \times \cdot 007\text{ mm}$, according to specimen from Schweinitz. It will stand as *Dothidea Artemisiæ* (Schwz.)

1545. *Nummularia subaffixa* (Schwz.)

Has hyaline allantoid sporidia $\cdot 008\text{ mm}$ long. It will be *Diatrype subaffixa* (Schw.), and is an ally of *Diatrype stigma*, Fr.

The above alterations are made, as we believe, entirely in the spirit of Professor Saccardo's interpretation of the genus. Such species as *Hypoxyylon cerebrina*, Fee., *Hypoxyylon Wrightii*, B. & C., *Hypoxyylon suborbiculare*, W. & C., and some others, could not possibly be regarded as having any relationship to the species now included. There are some four or five species included in our list, which we have never seen, and these are included on the faith of the diagnoses, in which we have followed Saccardo.

ADDITIONS.—The following diagnoses of species not included in the "Sylloge," under any name, will be found supplemented by

the classified list in which the numbers are quoted of such as are to be found in the same work.

Nummularia discincola (Schwz.), *Sphæria discincola*, Schw. Syn. Car., No. 63. *Anthostoma discincolum*, Sacc. Syll., No. 1104. The authentic specimen examined by Currey, and the sporidia figured, is a *Nummularia* differing in no respect, as far as we can judge from *Nummularia discreta*, to which species it was referred by Tulasne. What the species described by Fries (S. M. ii., 368) may be we do not venture to determine, but we have sufficient evidence that the *Sphæria discincola* of Schweinitz and of Currey, is a species of *Nummularia*, with sporidia from $\cdot 013 \times \cdot 01$ mm. Wherefore it should be placed in *Anthostoma* is one of the mysteries we fail to comprehend.

5 Nummularia Baileyi (Hypoxylon Bailey B. & Br.)

Erumpens, orbicularis, cupulata ($\frac{1}{4}$ - $\frac{1}{2}$ unc. diam.), margine incrassato elevato, disco ostiolis prominulis asperato. Peritheciis elliptico-oratis, centro immersis; ascis cylindricis. Sporidiis ellipticis, fuscis, variabilis ($\cdot 013$ - $\cdot 02$ mm. long.)

On wood. Brisbane, Queensland (*Bailey*, 428.)

14. Nummularia clypeus, (*Sphæria Clypeus*, Schwz., Syn. Car., No. 42).

Explanata, ambitu elliptico immersa, atro-nitens, ostiolis conicis prominulis exasperato (1-3 in.) margine ligneo undulato cingitur. Ascis cylindraccis. Sporidiis ellipticis, utrinque attenuatis, amygdalæformibus, continuis, fuscis ($\cdot 02 \times \cdot 008$ mm.).

On branches of *Catalpa*, &c. N. America (Dr. Curtis).

16. Nummularia macula (Schwz.) *Sphæria macula*, Schw. Syn. Car., No. 38.

Suborbicularis, erumpens, convexo-applanata, atra, ostiolis minutis punctiformibus notata. Ascis cylindraccis. Sporidiis late ovalibus atrofuscis ($\cdot 012 \times \cdot 009$ mm.).

On bark of *Platanus*.

Much smaller than *N. clypeus*.

26. Nummularia australis, Cke.

Stromate cortice innascens, erumpens, effusa, determinata, sæpe disciformis, convexa, impolita, atra. Peritheciis subglobosis, parvulis, 1-2 serialibus, ostiolis externis vix visibilis. Ascis cylindraccis. Sporidiis vere polymorphis, aliis fusiformibus ($\cdot 021 \times \cdot 009$ mm.); aliis ovatis ($\cdot 012 \times \cdot 008$ mm.); aliis intermediis, plerumque magnis, fuscis.

On bark. Clarence River, Australia. (Miss. Thorneton).

Sporidia very variable in form and size, larger than in *N. rumpens*, which it externally somewhat resembles.

27. Nummularia mauritanica, Berk. & Cke.

Discoidea, demum confluens irregularisque, erumpens, convexo-applanata, lævis, ater. Ostiolis obsolete. Peritheciis elongato-compressis. Ascis cylindraccis. Sporidiis ellipticis; utrinque rotundatis, fuscis ($\cdot 008 \times \cdot 004$ mm.).

On bark. Mauritius (No. 16), April 1857.

Habit of *N. exutans*, but sporidia smaller, uniformly obtusely rounded at the ends, whereas in that species they are almond shaped.

31. **Nummularia hypophlæa**, *B. & Rav.* (1137).

Sporidia $\cdot 008 \times \cdot 004$ mm.

32. **Nummularia testudinea**, *Cke.*

Suborbicularis, convexa, fusca; margine tenui, sterili; superficie demum in plagias minutas hexagonas fissurato-diffracti, plagiis cum peritheciis innatis convenientibus. Peritheciis centraliibus, congestis, globosis. Ascis cylindricis. Sporidiis ellipticis, fuscis ($\cdot 005 \times \cdot 003$ mm.).

On bark. West Africa.

34. **Nummularia Phillyreæ**, *Mont.* (1116).

Sporidia $\cdot 018 \times \cdot 01$ mm.

36. **Nummularia scriblita**, *Mont.* (1405).

Sporidia $\cdot 038\text{--}\cdot 04 \times \cdot 012$ mm.

37. **Nummularia scutata**, *Berk. & Cke.*

Tenuis, orbicularis, applanata, atra, erumpens; ostiolis minutis punctiformibus vix notatis. Ascis cylindraceutis. Sporidiis ellipticis, minutissimis, fuscis ($\cdot 004\text{--}\cdot 005 \times \cdot 0025$ mm.).

On branches. Mauritius.

Allied to *N. microplaca*, but thinner, and sporidia smaller.

NUMMULARIA.

SECT. A.—DISC CONCAVE.

1. *Nummularia repanda*, *Fr.* 1525.
2. „ *discreta*, *Schw.* 1529.
3. „ *discincola*, *Schw.* 1104.
4. „ *obularia*, *Fr.* 1540.
5. „ *Baileyi*, *B. & Br.*
6. „ *macrocenangium*, *Ces.* 1411.
7. „ *Moselei*, *Berk.* 1421.
8. „ *lutea*, *A. & S.* 1528.
9. „ *succenturiata*, *Tode.* 1527.
10. „ *gigas*, *Plow.* 1531.

SECT. B.—DISC CONVEX.

11. *Nummularia Bulliardi*, *Tul.* 1524.
12. „ *constricta*, *Fr.* 1543.
13. „ *repandoides*, *Fckl.* 1526.
14. „ *clypeus*, *Schw.* 1524.
15. „ *glycirrhiza*, *B. & C.* 1541.
16. „ *macula*, *Schw.*
17. „ *regia*, *DeNot.* 1538.
18. „ *mediterranea*, *DeNot.* 1539.
19. „ *anthracodes*, *Fr.* 1383.
20. „ *comedens*, *Ces.* 1389.

21. *Nummularia dryophila*, Tul. 1530.
22. „ *pithodes*, B. & Br. 1109.
23. „ *fossulata*, M. 1455.
24. „ *microsticta*, M. 1415.
25. „ *exutans*, Cke. 1105.
26. „ *australis*, Cke.
27. „ *mauritanica*, B. & Cke.
28. „ *rumpens*, Cke. 1140.
29. „ *placenta*, Kalch. 1377.
30. „ *microplaca*, B. & Rav. 1112.
31. „ *hypophlæa*, B. & Rav. 1137.
32. „ *testudinea*, Cke.
33. „ *tennis*, Pass. 1537.
34. „ *Phillyræa*, Mont. 1116.
35. „ *heterostoma*, Mont. 1380.
36. „ *scriblita*, Mont. 1405.
37. „ *scutata*, B. & Cke.
38. „ *cycliscus*, Mont. 1408.
39. „ *melanaspis*, Mont. 1419.
40. „ ? *Carabayense*, Mont. 1400.
41. „ ? *pachyloma*, Lev. 1417.
42. „ ? *sertata*, DR. & M. 1372.

AUSTRALIAN FUNGI.

By M. C. COOKE.

(Concluded from Vol. XI., p. 150.)

Gen. 6. *SPHÆROPSIS*. Lev.

Sphæropsis tricorynes, B. & Br. Linn. Trans. II., 68.

On *Tricoryne anceps*. Brisbane, Q.

Gen. 7. *GLÆOSPORIUM*. Mont.

Glæosporium cucurbitarum, B. & Br. Linn. Trans. II., p. 68.

On gourds. Brisbane, Q.

HYPHOMYCETES.

ORD. I. **ISARIACEI**. Fr.

Gen. 1. *ISARIA*. Pers.

Isaria graminiperda, B. & Mull. Gard. Chron., 1873, 596.

Australia Felix.

Isaria fuciformis, Berk. Linn. Journ. XIII., 175.

Mt. Gambier.

Isaria radians, *Berk. Fl. Tasm.* II., 271.
Tasmania.

Gen. 2. **CERATIUM**. *A. & S.*

Ceratium hydnoides, *A. & S. Consp.* t. 2, f. 7.
Rockhampton, Clarence River, Endeavour River.

Ceratium arbuscula, *B. & Br. Linn. Journ.* XIV., 97.
Queensland.

ORD. II. **STILBACEI**. *Link.*

Gen. 1. **STILBUM**. *Tode.*

Stilbum erythrocephalum, *Ditm. Sturm. Fl.* III., t. 45.
W. Australia.

Stilbum cinnabarinum, *Mont. Fl. Cub.* 308, t. 11, f. 3.
Queensland.

Gen. 2. **FUSARIUM**. *Link.*

Fusarium lateritium, *Nees, Syst.* 31, t. 26.
W. Australia.

Fusarium rubicolor, *B. & Br. Linn. Trans.* II., 1883, t. XV., f. 10-11.
Queensland.

Gen. 3. **ILLOSPORIUM**. *Mart.*

Illosporium flavellum, *B. & Br. Linn. Trans.*, 1883, p. 68.
Queensland.

Gen. 4. **MICROCERA**. *Desm.*

Microcera coccophila, *Desm. Ann. Sci. Nat.*, 1848, x., 359.
Queensland.

ORD. III. **MUCEDINEI**. *Fr.*

Gen. 1. **ASPERGILLUS**. *Link.*

Aspergillus glaucus, *Link. Spec.* I., 67.
Queensland.

Aspergillus Mulleri, *Berk. Linn. Journ.* XIII., 175.
Oolingarra.

Aspergillus mucoroideus, *Cooke.*

Gregarious. Mycelio albo, intricati-intertexto. Hyphis erectis, hyalinis, continuis, columella magno globoso coronatis, basidüs brevibus, cylindricis. Sporis diu persistentibus, globosis, fuscis, (.004 mm.) concatenatis, capitulo globoso atro formantibus.

On decaying plants. On *Gomphrena*. Arnheim's Land. On leaves; Johnstone River. (*Berthold.*)

Capituli about .015 mm. diam. Columella large. Hyphæ without septa. Spores adhering for a long time, so that altogether very liable to be mistaken for a *Mucor*, but the spores are in chains, and wholly external.

Gen. 2. *POLYACTIS*. *Link.*

Polyactis vulgaris, *Link. Obs. i., p. 14, f. 22.*
Tasmania.

Gen. 3. *PENICILLIUM*. *Link.*

Penicillium crustaceum, *Fr. Syst. Myc. III., 407.*
Clarendon.

Gen. 4. *VERTICILLIUM*. *Nees.*

Verticillium eximium, *Berk. Linn. Journ. XIII., 175.*
Paramatta.

Verticillium niveum, *Berk. Fl. Tasm. II., 271.*
Tasmania.

Gen. 5. *RHINOTRICHUM*. *Corda.*

Rhinotrichum pulchrum, *Berk. Linn. Journ. XIII., 175.*
Wangaratta.

Rhinotrichum microsporum, *Berk. Fl. Tasm. II., 272.*
Tasmania.

Rhinotrichum ramosissimum, *B. & C. North American Fungi, No. 662.*
Clarendon.

Rhinotrichum Carteri, *Cke.*

Album, pezizaeforme, subcompactum. Hyphis ramosis, septatis, sursum clavatis, sub-nodulosis. Sporis globosis (.008 mm. diam.), hyalinis, leniter ad basim apiculatis.

Upper Hunter River, N.S.W. (Carter.)

Gen. 6. *NEMATOGONUM*. *Desm.*

Nematogonium aureum, *Berk. Eng. Fl. v., 340.*
Queensland.

Nematogonium aurantiacum, *Desm. Ann. Sci. Nat., 1834, 70, t. 2, f. 1.*
Australia, in Herb. Berk.

Gen. 7. *THOZETIA*. *Berk. & Mull.*

Thozetia nivea, *Berk. Linn. Journ. XVIII., 388.*

Gen. 8. *OIDIUM*. *Link.*

Oidium Tuckeri, *Berk. Moniteur Belge, 1850, IX., 2383.*

Oidium erysipoides, *Fr. Syst. Myc. III., 432.*

Oidium leucoconium, *Desm. Ann. Sci. Nat., 1829, p. 102.*
Queensland.

ORD. IV. *DEMATIEI*. *Fr.*Gen. 1. *CLADOSPORIUM*. *Link.*

Cladosporium herbarum, *Link. Obs. II., 37.*
Queensland, Victoria.

Cladosporium papyricolor, *B. & Br. Linn. Trans.*, 1883, p. 68.
Queensland.

Cladosporium stenosporum, *Berk. & Curt. N. Amer. Fungi* No. 650.
Rockhampton.

Gen. 2. **HELMINTHOSPORIUM**. *Pers.*

Helminthosporium Ravenelii, *Curt. in Sill. Journ.*, 1848, 352.
Queensland.

Helminthosporium rhabdiferum, *B. & Br. Ann. Nat. Hist.*, 1865,
No. 1053.
S. Australia.

Gen. 3. **PODOSPORIUM**. *Schwz.*

Podosporium grande, *Cke.*

Atrum, magnum, lanosum, caespitos densos (1-2 in. long, $\frac{1}{2}$ -1 in. alt.) efformans. Hyphis erectis ($\frac{1}{2}$ in. et ultra), congestis, septatis, atrobrunneis, sporis elongato-clavatis, pluriseptatis (8-11), brunneis ($\cdot 07$ - $\cdot 08 \times \cdot 01$ mm.).

On stems of *Aster argophyllus* Gipps Land, Australia (Turton).

Forming dense woolly black tufts nearly an inch high. Superficially so much resembling *Antennaria scoriadea* that it has been sometimes mistaken for that species.

Gen. 4. **MYSTROSPORIUM**. *Corda.*

Mystrosporium pulchrum, *Berk. Hook. Journ. Bot.*, 1845, 70.
W. Australia.

Gen. 5. **FUSICLADIUM**. *Bon.*

Fusicladium dendriticum, (*Wallr.*) *Fekl. Symb.* p. 357.
S. Australia.

Fusicladium pyrinum, (*Lib.*) *Fekl. Symb.* p. 357.
S. Australia.

ORD. V. **TRICHODERMACEI**. *Fries.*

Gen. 1. **PILACRE**. *Fr.*

Pilacre divisa, *Berk. Fl. Tasm.* II., 271.
Tasmania.

Gen. 2. **TRICHODERMA**. *Pers.*

Trichoderma viride, *Pers. Syn. Fung.*, 230.
Tasmania. W. Australia. Queensland.
[Conidia of *Hypocrea rufa*.]

Gen. 3. **SEPEDONIUM**. *Link.*

Sepedonium chrysospermum, *Link. Sp.*, I., 29.

W. Australia. Queensland. [Conidia of *Hypomyces*.]

Gen. 4. **MYROTHECIUM**. *Tode.*

Myrothecium inundatum, *Tode. Meck.* I., 25, t. 5, f. 39.
Clarence River.

ORD. VI. **TORULACEI.** *Fr.*Gen. 1. **TORULA.** *Link.***Torula herbarum**, *Link. Obs. i., 19.*
Queensland.**Torula pinophila**, *Chev. Fl. Par. i., 34,*
Clarendon.Gen. 2. **BISPORA.** *Corda.***Bispora monilioides**, *Corda Icon. i., 9, t. 2, f. 143.*Gen. 3. **BACTRIDIDIUM.** *Kunze.***Bactrididium flavum**, *Kze. Myk. Hefte, t. 1, f. 2.*
Queensland.**Bactrididium magnum**, *Cke. Grevillea VIII., 60.*
Dividing Range.Gen. 4. **SPORIDESMIUM.** *Link.***Sporidesmium atrofusum**, *Cooke.*Effusum, velutinum, atrum. Spor. clavato-elongatis, irregularibus ($0.05-0.08 \times 0.015-0.02$ mm.), in cellulis quadratis utrinque divis, atro-fuscis.

On wood. Mount William, Victoria.

PHYSOMYCETES. *B.*ORD I. **MUCORINI.** *Fr.*Gen. 1. **MUCOR.** *Mich.***Mucor cervinoleucus**, *Berk. Fl. Tasm. II., 282.*
Tasmania.Gen. 2. **PHYCOMYCES.** *Kunze.***Phycomyces nitens**, *Kze. Myk. Hefte. II., 113.*
Broadribb River.Gen. 3. **CIRCINELLA.** *Tieg. & Mon.***Circinella umbellata**, *Tieg. & Mon, Am. Sci. Nat., 1873, t. 21, f. 18-23.* (= *Helicostylum Moreliæ*, B. & Br.).
Queensland.Gen. 5. **ENDOgone.** *Link.***Endogone australis**, *Berk. Fl. Tasm. II., 282.*
Tasmania.

ADDENDA.

The following species have been added to the Australian Flora since the publication of this catalogue commenced:—

HYMENOMYCETES. *Fr.***Agaricus (Lepiota) rhytipelta**, *Muell. Proc. Linn. Soc. N. S. W., 1882,*
p. 104.

Lake Muir, Mullersville, Western Port.

- Agaricus (Lepiota) mastoideus**, *Fr. Hym. Eur.*, 30.
Gipps Land, Barossa Range.
- Agaricus (Tricholoma) civilis**, *Fr. Hym. Eur.*, 71, *Fr. Icon.*, t. 42, f. 1.
Queensland.
- Agaricus (Clitocybe) rheicolor**, *Berk. Ann. Nat. Hist.* III., 376.
Queensland.
- Agaricus (Collybia) nivosulus**, *Berk. Fungi Cubensis* (No. 111.)
Gipps Land.
- Agaricus (Collybia) coagulatus**, *B. & Br. Linn. Trans.* II., 53.
Queensland.
- Agaricus (Mycena) acutatus**, *Kalch. Proc. Linn. Soc. N.S.W.*, 1882,
p. 104.
Western Port.
- Agaricus (Omphalia) glaucescens**, *Kalchb. Proc. Linn. Soc. N.S.W.*,
1882, p. 105.
Western Port.
- Agaricus (Pleurotus) salignus**, *Fr. Hym. Eur.*, 174.
Lake Bonney, Gipps Land, Endeavour River, N. S. Wales.
- Agaricus (Pleurotus) ostreatus**, *Fr. Hym. Eur.*, 173.
Illawarra.
- Agaricus (Pleurotus) semilibex**, *B. & Br. Linn. Trans.* II., 54.
Queensland.
- Agaricus (Pleurotus) mitis**, *Pers. Syn.*, 481.
Port Denison.
- Agaricus (Pholiota) spectabilis**, *Fr. Hym. Eur.*, 221.
N. S. Wales.
- Agaricus (Flammula) Baileyi**, *B. & Br. Linn. Trans.* II., 54.
Queensland.
- Agaricus (Naucoria) melinoides**, *Bull. Champ.*, t. 560, f. 1.
Queensland.
- Agaricus (Naucoria) cerodes**, *Fr. Hym. Eur.*, p. 257.
Moe Swamp, Gipps Land.
- Agaricus (Galera) peroxydatus**, *Berk. Journ. Bot.*, 1843, p. 511.
Queensland.
- Agaricus (Stropharia) squamosus**, *Fr. Hym. Eur.*, 285.
Clarendon.
- Agaricus (Hypholoma) Candolleanus**, *Fr. Hym. Eur.*, 295.
Daylesford.
- Hygrophorus gilvus**, *Kalchb. Proc. Linn. Soc. N. S. W.*, 1882, p. 105.
Western Port.
- Hygrophorus Lewellinæ**, *Kalchb. Proc. Linn. Soc. N. S. W.*, 1882, p. 105.
- Lactarius piperatus**, *Fr. Hym. Eur.*, p. 430.
Endeavour River.
- Lentinus strigosus**, *Fr. Epicr.*, p. 388.
N. Queensland.
- Lentinus blepharodes**, *Berk. & Curt. Fungi Cuba*, No. 155.
Port Denison.
- Lentinus Schomburgckii**, *Berk. Linn. Trans.* xx., 111, t. 9, f. 3.
Daintree River, Port Denison.

- Lentinus pelliculosus**, *Fr. Epicr.*, p. 395.
Richmond River.
- Lentinus catervarius**, *B. & Br. Linn. Trans.* II., 55.
Queensland.
- Lentinus exasperatus**, *B. & Br. Linn. Trans.* II., 55.
Queensland.
- Lentinus punctaticeps**, *B. & Br. Linn. Trans.* II., 55.
Queensland.
- Lentinus eugrammus**, *Mont. Cuba*, 414, t. 17, f. 2.
Queensland.
- Panus conchatus**, *Fr. Hym. Eur.*, 488.
Clarence River.
- Panus suborbicularis**, *B. & Br. Linn. Trans.* II., 55.
Queensland.
- Xerotus Berterii**, *Mont. Chil.* VII., 353.
Queensland.
- Xerotus albidus**, *B. & Br. Linn. Trans.* II., 56.
Queensland.
- Xerotus lateritius**, *B. & C. Journ. Linn. Soc.* X., 303.
Queensland.
- Lenzites repanda**, *Fr. Epicr.*, p. 404.
Queensland, Richmond River, Clarence River, Illawarra.
- Lenzites flaccida**, *Fr. Hym. Eur.*, 493.
Richmond River.
- Boletus haedinus**, *B. & Br. Linn. Trans.* II., 57.
Queensland.
- Boletus calopus**, *Fr. Hym. Eur.*, 506. *Srer. Svamp.*, t. 69.
Clarence River.
- Polyporus (Mesopus) Hartmanni**, *Cke.*
Pileo carnoso, subfragili, saepe dimidiato, leniter velutino, fusco-rubrescente, margine pallidiore, plano, vel late umbonato, disco crasso, stipite ventricosus crasso, hinc illic subradicato, sursum rubro velutino, deorsum pallidiore, sub reticulato-tomentoso, poris minimis, rotundis, æqualibus, brevissimis, leniter decurrentibus, pallidis. Sporibus minutis, ellipticis, albis.
On the ground. Toorvoomba, Queensland. (*Hartmann*, No. 10.)
An elegant species approaching *Boletus*, but with a descending trama. Pileus 3 inches diam., stem. $2\frac{1}{2}$ inches long, 1 inch thick. Pileus and stem minutely velvety, wholly rufescent except the pores, which are pallid. The diagnosis is drawn from the dried plant. Unfortunately collectors and colonial correspondents will not be persuaded to send drawings and details with their fleshy fungi, although for many years the Rev. M. J. Berkeley was continually urging it upon them. On account of this not more than one-tenth of the Agaricini and Boleti sent here can be accurately determined.
- Polyporus (Mesopus) tomentosus**, *Fr. Hym. Eur.*, 530.
Gipps Land, V.

Polyporus (Mesopus) similis, *Berk. Hook. Journ.*, 1843, 635.
 Endeavour River, Goode Island.

Polyporus (Mesopus) proteiporus, *Cooke*.

Pileo albido, e carnoso-lento, coriaceo, convexo-plano, depresso, leniter tomentoso-leproso, demum subglabro, margine integro, vel sublobato, incurvo; stipite brevi concolore; carne pallido; poris angulatis, irregularibus, confluentibus, decurrentibus ($\frac{1}{2}$ -2 mm. diam.) elongatis (5 mm.) pallide umbrinis. Dissepimentis tenuibus, margine laceratis.

On the ground. Torvooomba, Q. (*Hartmann*.)

Pileus 2-4 in. diam. Stem scarcely an inch long, half an inch thick, dilated upwards. In some respects resembling *P. rufescens* and *P. biennis*, but firmer, belonging rather to the section *Lenti* than *Spongiosi*.

Polyporus (Pleuropus) Strangerii, *Muell. Proc. Linn. Soc. N.S.W.*, 1882, 106.
 Riverina.

Polyporus (Pleuropus) nephridius, *Berk. Journ. Bot.* VIII., 195.
 Brisbane, Q.

Polyporus (Pleuropus) vinosus, *Berk. Ann. Nat. Hist.* II., Vol. IX., 195.
 Brisbane, Q.

Polyporus (Pleuropus) Leprieurii, *Mont. Syll.*, 155.
 New Guinea.

Polyporus (Pleuropus) Guilfoylei, *B. & Br. Linn. Trans.* II, 58.
 Brisbane, Q.

Polyporus (Pleuropus) mutabilis, *Berk. & Curt. Grev.* I., 38.
 Daintree River.

Polyporus (Pleuropus) brunneolus, *Berk. Sill. Journ.*, 1851, 94.
 Daintree River.

Polyporus (Pleuropus) carneo-niger, *Berk.*

Pileo reniformi, tenui, nigro, radiato-rugoso (2 unc. lat.) obscure zonato. Stipite brevi, elongatove, concolore, deorsum velutino-fusco, ad basim discoideo. Hymenio carneo, poris minutis, brevibus; dissepimentis crassis.

Daintree River.

Polyporus (Pleuropus) dorcadideus, *B. & Br. Linn. Trans.* II., 57,
t. 10, *f.* 16.
 Brisbane, Q.

Polyporus (Pleuropus) scopulosus, *Berk. Hook. Journ.*, 1852, 143.
 Daintree River.

Polyporus (Pleuropus) dictyopus, *Mont. Ann. Sci. Nat.*, 1835, p. 349.
 Queensland.

Polyporus (Pleuropus) Boucheanns, *Fr. Hym. Eur.*, 533.
 Endeavour River.

Polyporus (Merisma) retiporus, *Cooke*.

Cæspitoso-multiplex, succoso-caseosus, expallens, ochraceus, sicco fragilis. Pileis latissimis, imbricatis, undulatis, *velutino-tomentosis*; carne albo; poris angulatis, mediis, *brevissimis*; dissepimentis obtusis *retiformibus*.

On trunks. Daintree River.

Resembling *P. sulfureus*, but the pores are three times as large, much shorter, the dissepiments almost venose. It differs also in its velvety surface. Colour uncertain, as no information was sent with the dried specimens.

Polyporus (Merisma) laetus, Cooke.

Imbricato-multiplex, e lento coriaceus, læticolor. Pileolis dimidiatis, imbricato-concrescentibus, integris, in squamulis adpressis zonato-diffractis, aurantio-rubris, in coccineis purpureisque vergentibus, demum pallescentibus, postice in stipitem inæqualem confluentibus; margine acuto, carne fibroso, aurantio-rubro, tenui (5 mm. crass). Poris mediis, pallidis, acie tenui.

Victoria.

Pilei 3 to 6 inches, or more, broad. Portion only sent without information. Apparently allied to *P. giganteus*.

Polyporus (Merisma) anthracophilus, Cooke.

Imbricato-multiplex, e lento coriaceus, induratus, pileolis dimidiatis, imbricato-concrescentibus, sinuoso-lobatis, sub-tomentosis, demum adpresso-squamosis, badio-fuscis, postice in stipites inæquales albidos attenuatis, ambitu leniter zonatis; poris medio-cribus ($\frac{1}{3}$ - $\frac{1}{2}$ mm.) inæqualibus, angulatis, decurrentibus, albis; dissepimentis tenuibus, sub-dentatis.

On charred ground. S. W. Australia. (Muir, 116.) Rockhampton. (Thozet.)

Tufts 6 inches. Pores 1 cm. and upwards long. Becoming very hard when dry.

Polyporus (Merisma) confluens, Fr. Hym. Eur., 539.

Port Denison, Lord Howe's Island.

Polyporus (Anodermei) substuppeus, B. & Cooke Linn. Journ. xv., 381. Endeavour River.

Polyporus (Placodermei) betulinus, Fr. Hym. Eur., 555. Queensland.

Polyporus (Placodermei) marginatus, Fr. Hym. Eur., 561. Victoria. N. S. Wales.

Polyporus (Placodermei), lineato-scaber, B. & Br. Linn. Trans. II., 59, t. 11, f. 1. Queensland.

Polyporus (Placodermei) oblinitus, Berk. in Herb. Kewensis. Clarence River.

Polyporus (Placodermei) testudo, B. & Br. Linn. Trans. II., 59, t. 10, f. 19. Brisbane, Q.

Polyporus (Placodermei) dochmius, Berk. & Br. Linn. Journ. XIV., 50. Daintree River.

Polyporus (Inodermei), anebus, Berk. Hook. Journ., 1847, p. 504. Brisbane, Q.

Polyporus (Inodermei) cartilagineus, Berk. & Br. Linn. Journ., XIV., 49. Johnstone River.

Polyporus (Inodermei) velutinus, *Fr. Hym. Eur.*, 568.
Gipps Land, Endeavour River.

Polyporus (Inodermei) trizonatus, *Cooke*.

Pileo coriaceo, tenui, rigido, ochraceo, applanato, postice convexo, sericeo, zonis tribus elevatis obscurioribus variegato, margine integro, acuto. Poris minimis, rotundis, postice decurrentibus, albis ($\frac{1}{4}$ mm. diam.).

On trunks. Upper Yarra. (*Lucas*).

Pileus $1\frac{1}{2}$ -2 in., somewhat resembling *P. hirsutus* above, but silky and shining, similar also in appearance to some forms of *P. versicolor*, but not at all velvety. Almost uniformly with three elevated, slightly darker zones.

Polyporus (Inodermei) contrarius, *B. & Curt. Linn. Trans.* II., 60,
t. 11, *f.* 2-4.

Brisbane, Q.

Polyporus (Inodermei) stereoides, *Fr. Hym. Eur.*, 569.
Richmond River, Upper Daintree River.

Polyporus (Inodermei) vellereus, *Berk. Journ. Bot.*, 1842, p. 455.
Brisbane, Q.

Polyporus (Inodermei) breviporus, *Cooke*.

Ferrugineus. Pileo membranaceo, rigido, radiato-rugoso, scruposo, conchiformi, vel imbricato, margine crispato. Poris brevissimis, minutis, rotundatis, concoloribus ($\frac{1}{3}$ mm. diam.).

On trunks. Endeavour River.

Pileus very thin, conchate, resembling above a very thin *P. scruposus*, but not thicker than ordinary brown packing paper. Pores shallow, minute, very indistinct.

Polyporus (Inodermei) eriophorus, *B. & Br. Linn. Trans.* II., 60,
t. 11, *f.* 5, 6.

Brisbane, Q. Illawarra.

This was described as a resupinate species, but it is evidently a resupinate condition of a species of *Inodermei*.

Polyporus (Resupinatus) dictyoporus, *Cooke*.

Effusus, indeterminatus, tenellus, albus, incrustans, poris effusis, hinc illic centralibus, mediis, æqualibus, subangulatis; dissepimentis tenuibus, brevissimis, venoso-reticulatis, persistenter albis, partibus sterilibus villosis.

On charred wood. Torvoomba, Q.

With some resemblance to *P. terrestris*, but the very shallow pores are persistently white (about $\frac{1}{3}$ mm. diam.).

Polyporus (Resupinatus) contiguus, *Fr. Hym. Eur.*, 571.
Clarendon. Daintree River.

Polyporus (Resupinatus) medulla-panis, *Fr. Hym. Eur. p.*, 579.
Brisbane, Q.

Trametes obstinatus, *Cooke*.

Pileo coriaceo-lignoso, indurato, tenui, convexo-plano, depressove, pallido subcinereo, velutino, lineato-zonato; margine acuto, integro. Poris e rotundis elongatis ($\frac{1}{2}$ mm. diam.), denticulatis, ligni-coloribus.

On trunks. Endeavour River.

Pileus 2-3 inches broad, 2-3 mm. thick, very rigid, sometimes imbricated, with the habit of *Polyporus versicolor*, but differing in texture, with 2-3 linear reddish or purplish zones. Pores rigid, toothed, often oblique.

Trametes ochroflava, Cooke *Grevillea* IX., p. 12.

Brisbane, Q.

Dædalea incompta, Berk. *Linn. Trans.* II., 61, t. 12, f. 1, 2.

Port Douglas.

Dædalea scalaris, B. & Br. *Linn. Trans.* II., 61, t. 11, f. 7-9.

Brisbane, Q.

Hexagona tenuis, Hook. in *Kunth Synop.*, p. 10.

Queensland.

Laschia cæspitosa, Berk. *Hook. Journ.*, 1854, p. 229.

Queensland.

Merulius Baileyi, B. & Br. *Linn. Trans.* II. 62, t. 13, f. 1.

Queensland.

Merulius tenuissimus, B. & Br. *Linn. Trans.* II., 62.

Queensland.

Hydnum (Merisma) coralloides, Fr. *Hym. Eur.*, 607.

Illawarra.

Hydnum (Apus) meruloides, B. & Br. *Linn. Trans.* II., 63, t. 13, f. 4.

Queensland.

Irpex tabacinus, B. & Curt. *North Amer. Fungi*, No. 198.

Queensland.

Irpex gausapatus, B. & Curt. *N. Amer. Fungi* (No. 2922).

Endeavour River.

Radulum molare, Fr. *Hym. Eur.*, 623.

Queensland.

Craterellus cornucopioides, Fr. *Hym. Eur.*, 631.

Queensland.

Thelephora cristata, Fr. *Hym. Eur.*, 637.

Queensland.

Thelephora albo-marginata, Schwein. *Hook. Journ.*, 1847, 324.

N.S. Wales.

Stereum (Pleuropus) spathulatum, Berk. *Hook. Journ.* VIII., p. 274.

Queensland.

Stereum (Merisma) fasciatum, Schwein. *Syn.* p. 106.

Queensland.

Stereum (Merisma) simulans, B. & Br. *Linn. Trans.* p. 64, t. 13, f. 5-15.

Queensland.

Stereum (Merisma) complicatum, Fr. *Epicr.*, 548, *Linn. Trans.* II., t. 14, f. 12-14.

Queensland.

Stereum perlatum, Berk. *Hook. Journ.*, 1842, 153.

Port Denison.

Stereum molle, Lev. *Ann. Sci. Nat.*, 1846, 147.

Daintree River.

- Dictyonema membranaceum** (Ag.), *Berk. in. Hook. Journ.*, 1851, 16.
Cloudy Mount.
- Sparassis crispa**, *Fr. Hym. Eur.*, 666.
Clarendon.
- Peniophora bambusicola**, B. & Br. *Linn. Trans.* II., p. 64.
Queensland.
- Corticium ? amorphum**, *Pers. Syn.*, 165), *Fries. Hym. Eur.* 648.
Queensland.
- Clavaria grisea**, *Pers. Comm.*, 44. *Fr. Hym. Eur.*, 672.
Gipps Land.
- Clavaria mucida**, *Fr. Hym. Eur.*, 679.
Illawarra.
- Clavaria Kalchbrenneri**, *Muell. Proc. Linn. Soc. N.S.W.*, 1812, p. 105.
Western Port.
- Clavaria lurida**, *Kalchb. Proc. Linn. Soc. N.S.W.*, 1882, p. 105.
Western Port.
- Clavaria portentosa**, B. & Br. *Linn. Trans.* II., p. 65, t. 14, f. 15.
Queensland.
- Clavaria militina**, *Berk. Hook. Journ.*, 1852, p. 140.
Queensland.
- Clavaria rufa**, *Fl. Dan.*, t. 775, fig. 1.
Queensland.
- Tremella lutescens**, *Fr. Hym. Eur.*, 690.
Queensland.
- Dacrymyces militinus**, *Berk. (Tremella cinnabarina, Berk.), Fl. Tasm.* II., 263, t. 183, f. 7.
Clarendon, N. S. Wales. Tasmania.
- Dacrymyces stillatus**, *Nees. Syst.*, p. 89, f. 90.
Clarendon, N. S. W.
- Dacrymyces sacchari**, B. & Br. *Linn. Trans.* II., 65.
Queensland.

GASTEROMYCETES.

Gen. 1a. OMPHALOPHALLUS. *Kalch.*

- Omphalophallus Mullerianus**, *Kalch. Flora*, No. 6, 1883.
- Phallus rubicundus** (Bosc.), *Fr. Sys. Myc.*, II., 284.
Port Phillip.
- Scleroderma verrucosum**, *Pers. Syn. Fung.*, 154.
Queensland.
- Cyathus Novæ Zelandiæ**, *Tul. Ann. Sci. Nat.*, 1844, 66, t. 6, f. 1-5.
Upper Hunter River.

Gen. 2a. RHIZOPOGON. *Tul. (Hypogæi).*

- Rhizopogon luteolus**, *Fr. in Tul. Hypog.*, p. 81.
Murray River.

ÆCIDIOMYCETES.

Æcidium nymphoidearum, *B. & Br. Linn. Trans.* II., 67. (*Æ. nym-phoides*, *D.C. Fl. Fr.*)

Brisbane, Q.

Melampsora nesodaphnes, *B. & Br. Linn. Trans.* II., 67, t. 15, f. 9.

Brisbane, Q.

Ustilago Emodensis, *Berk. Hook. Journ.*, 1851, 202.

Brisbane, Q.

Tilletia epiphylla, *B. & Br. Linn. Trans.*, II., 67.

Brisbane, Q.

Gen. 9. **GRAPHIOLA**. *Poit.*

Graphiola phœnicis, *Poit. Ann. Sci. Nat.*, 1824, 473.

On date palm. Brisbane, Q.

DISCOMYCETES.

Peziza (Sepultaria) confusa, *Cke. Myco. t.* 32, f. 124.

Brisbane.

Peziza (Scutellinia) hirta, *Schum. Cke. Myco. t.* 33, f. 128.

Gipps Land, V.

Peziza (Scutellinia) coprogena, *B. & Br. Linn. Trans.* II., p. 69.

Brisbane, Q.

Peziza (Scutellinia) badio-berbis, *Berk. Grevillea* VIII., p. 137.

Clarendon.

Helotium terrestre, *B. & Br. Linn. Trans.* II., 69.

Brisbane, Q.

Ascobolus Baileyi, *B. & Br. Linn. Trans.* II., 69.

On dung. Brisbane, Q.

Patellaria lignyota, *Fr. Sys. Myc.* II., 150.

Gipps Land, V.

PYRENOMYCETES.

Xylaria (Xyloglossa) cynoglossa, *Cooke Grevillea* XII., p. 1.

Tweed River. (*R. Fitzgerald.*)

Hypoxylon serpens, *Fr. Sys. Myc.* II., 341.

Queensland.

Nummularia Baileyi, *Cooke Grevillea* XII., p. 6.

Brisbane, Q.

Meliola mollis, *B. & Br. Linn. Journ.* XIV., 136.

Queensland.

Meliola corallina, *Mont. Fl. Chil.* VII., 472.

Queensland.

Meliola Musæ, *Mont. Ann. Sci. Nat.*, 1846, p. 265.

Queensland.

Antennaria semiovata, *Berk. Ann. Nat. Hist.* II., vol. XIII., p. 468.

Queensland.

Chætomium cymatotrichum, Cooke.

Gregarium. Peritheciis depresso-globosis (·2 mm.) ubique lanosis, olivaceo-fulgineis, ostiolo atro; pilis tenuibus, simplicibus, glabris, intertextis, numerosissimis, gyroso-flexuosis, fuscis. Ascis pyriformibus, sporidiis globosis, ovatisve, leniter utrinque apiculatis, vel obtuso-rotundatis, fuligineis (·01 × ·008 mm.).

On leaves of *Solanum Dallachii*. Johnstone River, N. Queensland (Berthand).

Perithecia, including the hairs, ·04 mm. diam. Hairs waved throughout, from one-fourth to one-third the diameter of the sporidia.

CORRIGENDA.

References to be added to the following species:—

Agaricus (Pleurotus) sordulentus, B. & Br. *Linn. Trans.* II., 54.

Agaricus (Psalliota) versipes, B. & Br. *Linn. Trans.* II., 54.

Hygrophorus porphyrius, B. & Br. *Linn. Trans.* II., 55.

Panus incandescens, B. & Br. *Linn. Trans.* II., 55.

Panus viscidulus, B. & Br. *Linn. Trans.* II., 55.

Xerotus proximus, B. & Br. *Linn. Trans.* II., 56.

Polyporus (Mesopus) dictyopus, Rost. in *Sturm. Fl.*, to be deleted.

Polyporus luridus, Kalchbr., (p. 24), instead of *Polyporus lividus*, Kalchbr.

Trametes pictus, B. & Br. *Linn. Trans.* II., 61.

Sistotrema irpicinum, B. & Br. *Linn. Trans.* II., 63.

Hydnum meruloides, B. & Br. *Linn. Trans.* II., 63.

Melampsora phyllodiorum, B. & Br. *Linn. Trans.* II., 67.

Sphæria polyscia, B. & Br., not *Sphæria polyasca*, B. & Br.

NOTE.—The above Catalogue has been compiled chiefly from descriptions, or determinations, by several mycologists, with no type specimens, in many cases, available for reference. Consequently no attempt has been made at reduction, although confident that species have been introduced which cannot be maintained as distinct from species previously described. Different authors will naturally hold different views as to the limits of species in proportion to their knowledge and experience of exotic forms, and their tendencies to variation under varied conditions. We make these observations in order to prevent any misconception that we are prepared to adopt all the names quoted in the list.

August, 1883.

M. C. C.

NEW AMERICAN FUNGI.

By M. C. COOKE.

Chiefly consisting of diagnoses of the species published in Ravenel's North American Fungi.

PYRENOMYCETES IMPERFECTÆ.

Leptostroma micropuncta, Cooke in *Rav. Amer. Fungi*, No. 527.

Gregaria. Peritheciis minutissimis, applanatis, atris, maculis suborbicularibus efformantibus. Sporibus linearibus, hyalinis, utrinque obtusis ($.006 \times .0015$ mm.).

On Sabal. S. Carolina (Rav., 2848).

Leptostroma confluens, Cooke in *Rav. Amer. Fungi*, No. 530.

Peritheciis orbicularibus, applanatis, atris, demum confluentibus, in plagiis irregularibus aggregatis. Sporibus ellipticis, hyalinis, ($.004 \times .002$ mm.).

On bark of *Pinus*, S. Carolina (Rav., 2337).

Coniothyrium callicarpæ, Cooke in *Rav. Amer. Fungi*, No. 503.

Sparsum, tectum, demum cortice fissurato erumpens. Peritheciis atris, subdepressis. Sporibus globosis, pallide fuscis ($.004$ mm. diam.).

On branches of *Callicarpa* (Rav., 2711). S. Carolina.

Phoma musarum, Cooke in *Rav. Amer. Fungi*, No. 692.

Minutum, sparsum, punctiforme. Peritheciis subglobosis, atris, epidermide tenui tectis. Sporibus elliptico-elongatis ($.01 \times .003$ mm.).

On petioles of *Musa*, (Rav., 3182). Georgia, U.S.

Phoma atomæsporum, Cooke in *Rav. Amer. Fungi*, No. 541.

Sparsum, prominulum, atrum. Peritheciis subglobosis, poro pertusis. Sporibus minutissimis, profusis, hyalinis, ovato-ellipticis, ($.003 \times .0015$ mm.).

On petioles and midribs of *Magnolia* (Rav., 2656 B). S. Carolina.

Sphæropsis filamentosa, Cooke in *Rav. Amer. Fungi*, No. 545.

Sparsa, punctiformis. Peritheciis subglobosis, atris, cuticulâ hyalinâ tectis. Sporibus cylindricis, utrinque obtusis, hyalinis, ($.018-.02 \times .003-.004$ mm.).

On *Yucca filamentosa*, (Rav., 3089). S. Carolina.

Sphæropsis viticolum, Cooke in *Rav. Amer. Fungi*, No. 542.

Follicola, gregaria. Peritheciis subglobosis, demum centro depressis, fuscis. Sporibus sublanceolatis, rectis, curvulisve, hyalinis, ($.02-.024 \times .005-.0065$ mm.).

On leaves of *Vitis*, (Rav., 2933). South Carolina, U.S.

Sphæropsis tertium, Cooke.

Sparsum vel subgregarium, punctiforme. Peritheciis depressis, minimis, atris, cuticulâ tectis. Sporibus elongato-ellipticis, utrinque obtusis, hyalinis ($.018 \times .0035-.004$ mm.).

On branches of *Ailanthus*, (Rav., 2712). S. Carolina.

Sphæropsis Ricini, Cooke in Rav. Amer. Fungi, No. 543.

Caulicolum, sparsum. Peritheciis atris, subglobosis, demum depressis, poro pertusis. Sporis elongato-ellipticis, hyalinis, ($\cdot 02 \times \cdot 005$ mm.).

On stems of *Ricinus communis* (Rav., 2630). S. Carolina.

Sphæropsis Sacchari, Cooke in Rav. Amer. Fungi, No. 693.

Sparsam, vel in plagias irregulares consociatum. Peritheciis atris, subglobosis, erumpentibus. Sporis lanceolatis, hyalinis, ($\cdot 032\text{--}\cdot 042 \times \cdot 012$ mm.).

On culms of *Saccharum officinarum*, (Rav., 3173). Darien, Georgia.

Sphæropsis gladioli, Cooke.

Follicolum, in maculas pallidos gregarium. Peritheciis minimis, subglobosis, atris; sporis elongato-ellipticis, hyalinis, ($\cdot 02 \times \cdot 005$ mm.).

On leaves of *Gladiolus* (Rav., 2956). S. Carolina, U.S.

Discella quercina, Cooke in Rav. Amer. Fungi, No. 555.

Sparsa, erumpens, discoidea, primo cortice tecta, demum laciniato-fissurato. Disco atro. Sporis elongato-ellipticis, hyalinis, ($\cdot 015 \times \cdot 004$ mm.).

On bark of *Quercus aquatica* (Rav., 2857). S. Carolina.

Discella citri, Cooke.

Sparsa, rotundata, elliptica, vel elongata, fusca, primo epidermide tecta, demum lacerata. Sporis elongato-ellipticis, hyalinis, ($\cdot 016\text{--}\cdot 017 \times \cdot 0045$ mm.).

On twigs of *Citrus* (Rav., 2521).

Diplodia rosæcarpa, Cooke in Rav. Amer. Fungi, No. 550.

Sparsa. Peritheciis demum erumpentibus, subglobosis, atris, obtusis. Sporis ellipticis, uniseptatis, fuscis, ad medio constrictis, ($\cdot 02 \times \cdot 01$ mm.).

On fruits of *Rosa* (Rav., 2811). S. Carolina, U.S.

Diplodia Phoradendri, Cooke in Rav. Amer. Fungi, No. 549.

Sparsa, prominula. Peritheciis globosis, atris, demum superne nudis. Sporis magnis, ellipticis, uniseptatis, fuscis, ad medio constrictis ($\cdot 032 \times \cdot 02$ mm.).

On *Phoradendron* (Rav., 3042). Seaboard of S. Carolina.

Allied to *Diplodia compressa*, but distinct.

Diplodia Euonymi, Westdp. Rav. in Amer. Fungi, No. 548.

Sporis ($\cdot 022\text{--}\cdot 024 \times \cdot 008$ mm.).

On *Euonymus Europæus*, (Rav., 2918). S. Carolina.

SPHÆRELLOPSIS, Cooke.

Perithecia erumpens, vel subsuperficialis, membranacea. Sporis uniseptatis, hyalinis.

Sphærellopsiis quercuum, Cooke.

Hypophylla, sparsa. Peritheciis subglobosis, subsuperficialis, minimis ($\cdot 15$ mm. diam.) fuscis. Sporis lanceolatis, uniseptatis, hyalinis ($\cdot 016 \times \cdot 004$ mm.).

On leaves of *Quercus virens*. Darien, Georgia (Rav., 2500 bis.)

Hendersonia Wistariæ, Cooke in *Rav. Amer. Fungi*, 782.

Sparsa, tecta, dein erumpens. Peritheciis subglobosis vel depressis, atrofusciis. Sporibus lanceolatis, triseptatis, fuscis, ($.01 \times .003$ mm.).

On branches of *Wistaria sinensis* (Rav., 2617). S. Carolina.

Hendersonia Musæ, Cooke in *Rav. Amer. Fungi*, No. 781.

Sparsa, tecta, punctiformis. Peritheciis parvulis, subglobosis, fuscis. Sporibus lanceolatis, triseptatis, hyalinis, ($.012 \times .004$ mm.).

On *Banana* (Rav., 3369). Darien, Georgia.

Pleococcum pezizoideum, Cooke in *Rav. Amer. Fungi*, No. 699.

Sparsum, atrum, cupulæformis, erumpens, margine subintegro, disco cinereo. Sporophoris simplicibus, subrectis. Sporibus linearibus, obtusis, hyalinis, ($.007 \times .002$ mm.).

On leaves of *Lathyrus* (Rav., 3322). S. Carolina, U.S.

Pestalozzia Cryptomeriæ, Cooke in *Rav. Amer. Fungi*, No. 554.

Follicola, sparsa. Peritheciis tenuibus, subprominulis, convexis; sporibus lanceolatis, longe stipitatis, triciliatis, trilocularibus, fuscis, utrinque hyalino-apiculatis ($.012 \times .0035$ mm.).

On *Cryptomeria*, (Rav., 2614). S. Carolina.

Spores smaller than in *P. funerea*.

Vermicularia polytricha, Cooke in *Rav. Amer. Fungi*, No. 532.

Erumpens, cupulæformis, strigosa, atra. Setis dense congestis, erectis, rigidis, subulatis, glabris, atrofusciis. Sporibus lanceolatis, lunatis, nucleatis, hyalinis, ($.03 \times .004$ mm.).

On Lima bean, (Rav., 2988). S. Carolina.

Chætophoma sabal, Cooke in *Rav. Amer. Fungi*, No. 535.

Sparsa, fusca, velutina. Hyphis conidiisque ut in *Macrosporio*. Peritheciis subglobosis, membranaceis, fuscis ($.1$ mm. diam.). Sporibus ellipticis, hyalinis ($.004 \times .0015$ mm.).

On Sabal, (Rav., 2847). S. Carolina.

Chætophoma myriospora, Cooke in *Rav. Amer. Fungi*, No. 537.

Sparsa, fusca. Hyphis erectis, simplicibus, septatis. Conidiis macrosporoideis, clavatis ($.04 \times .013$ mm.). Peritheciis globoso-depressis, minimis ($.05$ mm. diam.) membranaceis. Sporibus ellipticis, hyalinis, minutis ($.003 \times .001$ mm.).

On stems of *Delphinium*, (Rav., 2669). S. Carolina.

Chætophoma Musæ, Cooke in *Rav. Amer. Fungi*, No. 536.

Effusa, atro-fusca, pannosa. Hyphis intertextis, cladosporoideis (*Cladosporium pannosum*, Cooke). Peritheciis globoso-depressis, membranaceis, fuscis ($.08$ mm. diam.). Sporibus ellipticis, hyalinis ($.004 \times .002$ mm.).

On *Musa*, (Rav., 3056). S. Carolina.

Asteroma cerasi, Cooke in *Rav. Amer. Fungi*, No. 521.

Hypophylla. Maculis orbicularibus, radiantibus, atris. Peritheciis parvulis, applanatis, mycelio fusco insidentibus. Sporibus ovalibus, continuis, hyalinis ($.004 \times .002$ mm.).

On leaves of *Cerasus Carolinensis*, (Rav., 2766). S. Carolina.

Asteroma Liriodendri, Cooke in *Rav. Amer. Fungi*, No. 522.

Amphigena. Maculis parvulis, suborbicularibus, fuliginosis. Peritheciis convexis, atris. Sporibus minutissimis, ovalibus, hyalinis ($.0015 \times .001$ mm.).

On leaves of *Liriodendron*, (Rav., 2859). S. Carolina.

Asteroma tinctoria, Cooke in *Rav. Amer. Fungi*, No. 523.

Epiphylla. Maculis suborbicularibus, atro-cinereis. Peritheciis irregularibus, applanatis, ($.1$ mm. diam.) atris. Sporibus ovato-ellipticis, hyalinis ($.002 \times .001$ mm.).

On leaves of *Quercus tinctoria*, (Rav., 2765). S. Carolina.

Leptothyrium cinctum, Cooke in *Rav. Amer. Fungi*, No. 517.

Hypophyllum. Peritheciis subangulatis, minutis, applanatis, fuscis, circiter annulo pallescente cinctis. Sporibus ovalibus, hyalinis ($.005 \times .0025$ mm.).

On leaves of *Cerasus serotina*, (Rav., 3126). S. Carolina.

Leptothyrium rosarum, Cooke in *Rav. Amer. Fungi*, No. 518.

Hypophyllum. Peritheciis discoideis, applanatis, atris, hinc illic aggregatis. Sporibus ovato-ellipticis, hyalinis ($.0035 \times .002$ mm.).

On Rose leaves, (Rav., 2705). S. Carolina.

Cheilaria Cratægi, Cooke in *Rav. Amer. Fungi*, No. 516.

Hypophylla. Peritheciis sparsis, minutissimis, applanatis, superne in lacinias 3-4 apertis. Sporibus ovalibus, hyalinis, ($.003 \times .0015$ mm.).

On leaves *Crataegus*. (Rav., 2730, 2682.) S. Carolina.

Septoria dryina, Cooke in *Rav. Amer. Fungi*, No. 783.

Amphigena. Maculis orbicularibus, albis, minimis, rubrocinctis. Peritheciis paucis, punctiformibus, atris. Sporibus linearibus, curvulis, nucleolis repletis, hyalinis ($.05-.06 \times .0015$ mm.).

On leaves of *Quercus fulcata*. (Rav., 3326.) S. Carolina.

Septoria Solidaginis, Cooke in *Rav. Amer. Fungi*, No. 784.

Amphigena. Maculis rubro-purpureis, irregularibus. Peritheciis sparsis, minutis. Sporibus linearibus, flexuosis, nucleolis repletis, hyalinis ($.05 \times .001$ mm.).

On leaves of *Solidago odora*. (Rav., 3338.) S. Carolina.

Septoria albopunctata, Cooke in *Rav. Amer. Fungi*, No. 510.

Epiphylla. Maculis punctiformibus, albis, purpureo-cinctis; Peritheciis 1-2 centro maculæ insidentibus. Sporibus linearibus, nucleatis, hyalinis ($.06-.07 \times .002$ mm.).

On leaves of *Vaccinium arboreum*. (Rav., 2618.) S. Carolina.

Septoria gossypina, Cooke in *Rav. Amer. Fungi*, No. 509.

Epiphylla. Maculis albidis, irregularibus, purpureo-cinctis. Peritheciis punctiformibus, centralibus, atris, semi-innatis. Sporibus linearibus, hyalinis ($.05 \times .001$ mm.).

On leaves of *Gossypium*. (Rav., 2698). S. Carolina.

Phyllostica Phytolacæ, Cooke in *Rav. Amer. Fungi*, No. 514.

Epiphylla. Maculis orbicularibus fuscis. Peritheciis minutis, semi-innatis, fuscis. Sporibus breviter linearibus, obtusis, hyalinis, rectis ($.008 \times .0015$ mm.).

On leaves of *Phytolacca*. (Rav., 2661.) S. Carolina.

Phyllosticta Nyssæ, Cooke in *Rav. Amer. Fungi*, No. 798.

Epiphylla. Maculis pallidis, irregularibus, magnis, purpureo-cinctis. Peritheciis minutissimis, punctiformibus, atris. Sporis subellipticis, hyalinis ($.0035 \times .0015$ mm.).

On leaves of *Nyssa capitata*. (Rav., 3386). Darien, Georgia.

Phyllosticta Bauhiniaë, Cooke.

Epiphylla. Maculis irregularibus, fuscis. Peritheciis minutis, sparsis, punctiformibus, atris. Sporis ellipticis, hyalinis, ($.0075 \times .002$ mm.).

On leaves of *Bauhinia*. Caraccas, Venezuela.

Phyllosticta sassafras, Cooke in *Rav. Amer. Fungi*, No. 515.

Epiphylla. Maculis orbicularibus, fuscis. Peritheciis numerosis, quandoque circinatis, sparsisve, atris ($.1$ mm.). Sporis elliptico-lanceolatis ($.007 \times .0015$ mm.), hyalinis.

On leaves of *Sassafras officinale*. (Rav., 2767, 2672.) S. Carolina.

Phyllosticta Liriodendri, Cooke.

Epiphylla. Maculis orbicularibus, fuscis, albescens, fusco-limitatis. Peritheciis paucis, punctiformibus, centro congregatis, atris. Sporis ellipticis, hyalinis, ($.006 \times .002$ mm.).

On leaves of *Liriodendron*. (Rav., 2917.) S. Carolina.

Phyllosticta pyrorum, Cooke in *Rav. Amer. Fungi*, No. 512.

Epiphylla. Maculis dealbatis, magnis, semi vel totam paginam occupantibus, lineâ purpureâ determinatis. Peritheciis sparsis, convexis, atris. Sporis linearibus, rectis vel subcurvulis, hyalinis ($.01 \times .002$ mm.).

On pear leaves. (Rav., 2710.) S. Carolina.

Phyllosticta serotina, Cooke in *Rav. Amer. Fungi*, No. 513.

Amphigena. Maculis orbicularibus, fuscis, lineâ obscuriore limitatis. Peritheciis sparsis, punctiformibus, minutis. Sporis elliptico-lanceolatis, hyalinis ($.012 \times .003$ mm.).

On leaves of *Cerasus serotina*. (Rav., 3108.) S. Carolina.

Glæosporium Hamamelidis, Cooke in *Rav. Amer. Fungi*, No. 511.

Amphigenum. Maculis suborbicularibus, (1 cm. lat.) atro-fuligineis, hinc illic pertusis. Sporis subellipticis, obtusis, rectis, vel leniter curvulis, hyalinis, ($.01 \times .0025-.003$ mm.).

On leaves of *Hamamelis Virginica*. (Rav., 2734.) S. Carolina.

Glæosporium aceris, Cooke in *Rav. Amer. Fungi*, No. 525.

Hypophyllum. Maculis irregularibus, cinereo-fuligineis, sparse pertusis. Sporis ($.018 \times .005$ mm.), ellipticis, obtusis, rectis flexuosisve, hyalinis.

On leaves of *Acer rubrum*. (Rav., 2731.) S. Carolina.

HYPHOMYCETES.

Tubercularia ailanthis, Cooke in *Rav. Amer. Fungi*, No. 288.

Atra, nitida, globosa, breviter stipitata, erumpens. Hyphis elongatis, tenuissimis, curvulis, ramulosis, compactis. Sporis cylindraceis, obtusis ($.01 \times .001$ mm.) hyalinis.

On branches of *Ailanthus glandulosa* (Rav., 2283). S. Carolina.

Undoubtedly the stroma of a *Nectria*, which surrounded some of the pustules, but too immature for determination.

Oidium pulvinatum, Cooke in Rav. Amer. Fungi, No. 770.

Hypophylla. Fasciculæ gregariæ maculas indeterminatas efformantes. Hyphis abbreviatis, simplicibus, continuis, in pulvinulos convexos congestis. Sporibus ellipticis, hyalinis, concatenatis (0.012×0.005 mm.).

On green leaves of *Carya tomentosa* (Rav., 3319). S. Carolina.

Ramularia crypta, Cooke in Rav. Amer. Fungi, No. 581.

Hypophylla, tomento foliorum tecta. Hyphis crassis, simplicibus, abbreviatis. Sporibus cylindraceis, utrinque obtusis, rectis vel leniter curvulis, hyalinis ($0.025-0.03 \times 0.006$ mm.).

On leaves of *Quercus falcata* (Rav., 3125).

Trichothecium griseum, Cooke in Rav. Amer. Fungi, No. 580. *Pyricularia grisea*, Sacc. Mich. II., 148.

On leaves of grasses (Rav., 2637).

Described as having the spores solitary at the apices of the threads, but, unless we are greatly mistaken, several grow together, as indicated by the short papillæ at the apex of the thread.

Botrytis elegantula, Cooke in Rav. Amer. Fungi, No. 573.

Fusca, lanosa. Hyphis erectis, septatis, bi-tri-furcatis, apicibus ramulorum sporiferis, fuscis. Sporibus subglobosis, in simul 2-3 (0.005×0.0045 mm.).

On rotting grass (Rav., 2944). S. Carolina.

Botrytis nivosa, Cooke.

Nivosa, cæspitosa. Hyphis tenuibus, abbreviatis, ramosis, septatis, ramulis sursum fastigiato-divisis. Sporibus ellipticis, hyalinis, (0.004×0.002 mm.), ad apicem conglobatis.

On sweet potato. S. Carolina.

Botrytis sphagnum, Cooke in Rav. Amer. Fungi, No. 572.

Nivea, lanosa, cæspitosa. Hyphis sterilibus elongatis, intertextis, furcatis, parce septatis, hyphis fertilibus abbreviatis, sursum bi-vel tri-dichotomis, ramulis fastigiatis, abbreviatis. Sporibus subglobosis, minutis, paucis, hyalinis (0.003 mm.).

On *Sphagnum* (Rav., 2985).

Threads and spores about the same diameter.

Rhopalomyces cervinum, Cooke in Rav. Amer. Fungi, No. 574.

Effusum, indeterminatum, cervinum. Hyphis repentibus, ramulis assurgentibus, septatis, globoso-capitatis. Capitulis spiculiferis (0.05 mm.). Sporibus ellipticis, hyalinis, ad spiculis solitariis (0.008×0.004 mm.).

On cow dung (Rav., 3142).

Rhinotrichum corticioides, Cooke in Rav. Amer. Fungi, No. 575.

Effusum, compactum, pallidum, corticii-forme, denum fissuratum. Hyphis repentibus, ramosis; ramulis assurgentibus, crassioribus, moniliformibus, constrictis, cellulis ultimis penultimisque spiculosis, aurantio-fulvis. Sporibus ellipticis, profusis, lævibus, concoloribus, ($0.012-0.014 \times 0.0065-0.007$ mm.).

On charred pine logs (Rav., 2835). S. Carolina.

Myxormia hyospila, Cooke in Rav. Amer. Fungi, No. 556.

Hypophylla, *Hypospila* simulans. Receptaculis ellipticis, cinereis, stellato vel dentato-apertis, cupulæformibus, disco nigro. Sporis concatenatis, ovalibus, hyalinis ($\cdot 005 \times \cdot 003$ mm.).

On leaves of *Diospyros virginica* (Rav., 2764).

Epicoccum maculatum, Cooke in Rav. Amer. Fungi, No. 774.

Hypophyllum. Maculis orbicularibus fuscis. Stromaticis globoso-depressis ($\cdot 06$ mm. diam.). Sporis globosis, lævibus, fuscis, ($\cdot 0065$ mm. diam.).

On dead leaves (Rav., 3387). Darien, Georgia.

Seated on definite orbicular spots, so as to resemble a *Sphaeria* at first sight.

Torula fusoides, Cooke & Hark.

Pulvinata, atra, pulverulenta. Sporis fusoides, in catenas erectis simplicibus conjunctis, pallide fuliginis ($\cdot 013 \times \cdot 003$ mm.).

On *Gynerium argenteum* (Harkness, 2136). California.

Sporidesmium fumago, Cooke in Rav. Amer. Fungi, No. 563, 564.

Epiphyllum, atrum, effusum, indeterminatum. Hyphis repentibus, nodulosis. Sporis sub-ellipticis, angulatis, difformibusque, cellulosis, quandoque 3-4 concatenatis, ad basim breviter stipitatis, atrofuscis ($\cdot 02 \times \cdot 015$ mm.).

On leaves of *Cratægus* (Rav., 2681). On pear (Rav., 3082). On *Helianthus* (Rav., 2622). On *Euonymus* (Rav., 2932). S. Carolina.

Very variable both in size and form, but the above appears to be the most highly developed condition.

Sporidesmium culmigenum, Cooke in Rav. Amer. Fungi, No. 561.

Atrum, effusum, indeterminatum. Sporis breviter stipitatis, elliptico-globosis, angularibusque, concatenatis, cellulosis, atrofuscis ($\cdot 03 \times \cdot 02$ mm.).

On *Sorghum* (Rav., 3001, 3004).

Spores less opaque than in *S. polymorphum*, and larger than in *S. melanopum*.

Sporidesmium herbarum, Cooke.

Atrum, effusum, indeterminatum. Sporis sessilibus, elongato-ellipticis, cellulosis, quandoque concatenatis, atris ($\cdot 03 \times \cdot 015$ mm.).

On tomato stems (Rav., 2941).

Cells of spores rather large.

Sporidesmium ellipticum, Cooke in Rav. Amer. Fungi, No. 562.

Atrum, circiter pustulas *Diatrypeis* conspersum. Sporis ellipticis, truncatis, multi-cellulosis, leniter constrictis, atris, quandoque 2-3 concatenatis ($\cdot 05 \times \cdot 03$ mm.).

Around pustules of *Diatrype disciformis*. On *Magnolia* (Rav., 2904). S. Carolina.

Clasterisporium strumorum, Cooke. *Sporidesmium strumorum*, Cooke in Rav. Amer. Fungi, No. 336.

Atrum, in strumas corticarum innascens. Hyphis tenuibus, repentibus, ramulosis. Sporis erectis, sessilibus, cylindræis, multi-

septatis, constrictis, plerumque ad apicem hyalino-apiculatis ($\cdot 1 \times \cdot 01$ mm.).

On living oak branches (Rav., 127). Florida.

Having the appearance of *Dichæna strumorum*.

Helminthosporium parvulum, Cooke in Rav. Amer. Fungi, No. 613.

Tenue effusum, atro-fuscum. Hyphis simplicibus, tenuissimis, septatis, erectis, flexuosis vel subrigidis ($\cdot 08$ - $\cdot 1$ mm. long). Sporis inspersis, cylindricis, obtusis, 1-2 septatis, rectis, fuscis ($\cdot 01$ - $\cdot 017 \times \cdot 0035$ mm.).

On denudated branches. New England (5866). On *Vaccinium arboreum* (4806), and upon *Gynerium argenteum*. Rav. Amer. Fungi, No. 613.

No feature present to distinguish the form on the grass from those growing on branches. A very thin and delicate species.

Helminthosporium asterinum, Cooke.

Maculæforme, asteroideum, atrum. Floccis erectis, simplicibus, rigidulis, subflexuosis, septatis, fuscis ($\cdot 006$ - $\cdot 007$ mm. diam.). Sporis obclavatis, superne rotundatis, deorsum truncatis, 7-8 septatis, fuscis ($\cdot 09$ - $\cdot 11 \times \cdot 015$ - $\cdot 017$ mm.).

On *Liquidambar*. Florida, S. Carolina (1541).

There is not the slightest doubt that the specimens in Rav. Fung. Amer., No. 163, described in "Grevillea," vol. vi, p. 141, were quite immature, and that the description, as amended above, applies to the mature plant. Having now seen many gradations, we are convinced of the identity of the above. The peculiar habit remains the same, the chief difference is in the increase in size of the spores.

Helminthosporium lanceolatum, Cooke in Rav. Amer. Fungi, No. 614.

Effusum, atrum. Hyphis simplicibus, erectis, flexuosis, pluriseptatis, subfasciculatis, atrofuscis. Sporis lanceolatis, sursum longe cuspidatis, hyalino-fuscis, deorsum truncatis, multiseptatis, ($\cdot 1$ - $\cdot 15 \times \cdot 008$ - $\cdot 01$ mm.).

On bark of *Berchemia* (Rav., 2910). S. Carolina.

Threads about half the diameter of those in *Helm. caudatum*, B. & C.

Helminthosporium minus, Schwz.

According to an authentic specimen this is only a dwarf variety of *Helm. macrocarpum*.

Helminthosporium dubium, Schwz.

No appreciable difference between this and *Helm. caudatum*, B. & C., according to original specimen from Schweinitz.

Helminthosporium brassicæcola, Schwz.

The only authentic specimen we have seen consists of the spores of *Helm. foliculatum*, Corda.

Helminthosporium crustosum, Schwz.

Has a compact crustaceous black stroma, from which arise short slender threads; but no spores could be detected in the original specimen. It is probably a distinct species, in so far as the peculiar stroma is concerned.

Triposporium Ravenelii (Farlow), Cooke in Rav. Amer. Fungi, No. 778.
Effusum, atrum, parasitans (?). Hyphis algarum immixtum. Sporis triradiatis, septatis, fuscis, ad apicem hyalinis, inspersis (radiis $\cdot 012$ mm. longis, biseptatis). *Asterosporium Ravenelii*, Farlow MS.

On bark of *Platanus*, mixed with alga threads (Rav., 3050).

Trichaegum culmorum, Cooke.

Effusum, indeterminatum, atrofusum. Hyphis fascienlatis, breviter septatis, simplicibus, fuscis. Sporis subglobosis, radiato-septatis, atris, levibus ($\cdot 02$ mm. diam.).

On wheat straw (Dr. Harkness, 996). California.

Spores with 5-6 cells.

Cercospora Berkeleyi, Cooke (HELMINTHOSPORIUM OLIVACEUM, B. & C. North Amer. Fungi) Rav. Amer. Fungi, No. 594; HELMINTHOSPORIUM PISTILLARE, Rav. Amer. Fungi, No. 777.

Sporis clavato-attenuatis ($\cdot 08\text{--}\cdot 12 \times \cdot 005$ mm.).

On leaves of *Gleditsia triacanthos* (Rav., 2701). Rav. North Amer. Fungi Exs., No. 594. S. Carolina.

On leaves of *Tetranthera geniculata* (Rav., 3360). Darien, Georgia.

Cercospora nigricans, Cooke.

Epiphylla. Maculis effusis, irregularibus, atro-fuligineis. Hyphis fasciculatis, brevibus, fuscis. Sporis cylindraceis, vel superne leniter attenuatis, 3-5 septatis, hyalinis ($\cdot 05\text{--}\cdot 06 \times \cdot 002$ mm.).

On leaves of *Cassia obtusifolia* (Rav., 4023). S. Carolina.

Cercospora phaseolorum, Cooke in Rav. Amer. Fungi, No. 584.

Epiphylla. Maculis pallidis, vix determinatis. Hyphis fasciculatis, abbreviatis, pallide fuligineis. Sporis subcylindricis, terebibus, 3-5 septatis, pallidis ($\cdot 04\text{--}\cdot 05 \times \cdot 004$ mm.).

On leaves of *Phaseolus* (Rav., 2692). S. Carolina.

Spores not half as long as in *Cercospora olivascens*, Sacc.

Cercospora pustula, Cooke in Rav. Amer. Fungi, No. 779.

Hypophylla. Maculis orbicularibus, pustulæformibus, atrofusis. Hyphis paucis, fasciculatis, fuscis. Sporis flexuosis, superne attenuatis, nucleatis ($\cdot 07 \times \cdot 003$ mm.) hyalinis.

On leaves of *Ampelopsis* (Rav., 3378). Darien, Georgia.

Cercospora Xanthoxyli, Cooke in Rav. Amer. Fungi, No. 780.

Epiphylla. Maculis irregulariter ellipticis, pallidis, determinatis. Hyphis brevissimis, dense fasciculatis, fuscis. Sporis cylindraceis, 1-3 septatis, hyalinis ($\cdot 025\text{--}\cdot 03 \times \cdot 003$ mm.).

On leaves of *Xanthoxylon Carolinense* (Rav., 2362). Darien, Georgia.

Cercospora Chenopodii, Fresenius, Rav. N. Amer. Fungi, No. 591.

On stems of *Chenopodium album* (Rav., 2935). S. Carolina.

Cercospora moricola, Cooke in Rav. Amer. Fungi, No. 587.

Hypophylla. Maculis orbicularibus, rubro-fuscis. Hyphis fasciculatis, abbreviatis, olivaceis. Sporis superne attenuatis 3-4 septatis, hyalinis ($\cdot 07 \times \cdot 003$ mm.).

On leaves of *Morus* (Rav., 2679). S. Carolina. Clevedon, England.

Cercospora crotonifolia, Cooke in Rav. Amer. Fungi, No. 593.

Epiphylla. Maculis orbicularibus, albidis; hyphis abbreviatis, vel obsoletis, subfasciculatis. Sporis cylindraceis, rectis, obtusiusculis, 1-3 septatis, hyalinis ($\cdot 028\text{--}\cdot 04 \times \cdot 003$ mm.).

On leaves of *Croton glandulosum* (Rav., 2697). S. Carolina.

Cercospora gossypina, Cooke in Rav. Amer. Fungi, No. 583.

Epiphylla. Maculis effusis, indeterminatis, fuscis. Hyphis subfasciculatis, elongatis, flexuosis, fuscis ($\cdot 12\text{--}\cdot 15$ mm.). Sporis elongatis, superne attenuatis, flexuosis, 5-7 septatis, hyalinis ($\cdot 07\text{--}\cdot 1 \times \cdot 003$ mm.).

On leaves of *Gossypium* (Rav., 2699). S. Carolina.

Cercospora citrullina, Cooke in Rav. Amer. Fungi, No. 589.

Epiphylla. Maculis orbicularibus, albidis, purpureo-cinctis. Hyphis elongatis, teretibus, pallide olivaceis. Sporis longissimis, superne attenuatis, parce septatis, hyalinis ($\cdot 12\text{--}\cdot 14 \times \cdot 003$ mm.).

On leaves of Water Melon (Rav., 3101). S. Carolina.

Cercospora Diospyri, (Thumen). Cooke in Rav. Amer. Fungi, No. 588.

Hypophylla. Maculis indeterminatis pallide fuligineis. Hyphis fasciculatis, flexuosis, olivaceis. Sporis obclavatis, 4-7 septatis, cellulis abbreviatis, ad dissepimentis constrictis, hyalinis ($\cdot 03\text{--}\cdot 045 \times \cdot 004$ mm.).

On leaves of *Diospyros* (Rav., 2659). S. Carolina.

Cercospora sparsa, Cooke in Rav. Amer. Fungi, No. 590.

Hypophylla. Maculis indeterminatis, fuscis. Hyphis sparsis, abbreviatis. Sporis superne attenuatis, 2-3 septatis, hyalinis ($\cdot 05\text{--}\cdot 07 \times \cdot 003$ mm.).

On leaves of *Kalmia latifolia* (Rav., 2743). S. Carolina.

Cercospora copallina, Cooke in Rav. Amer. Fungi, No. 586.

Amphigena. Maculis suborbicularibus, rubrofuscis. Hyphis dense fasciculatis, fuscis, deorsum nigricantibus. Sporis cylindraceis, flexuosis, nucleatis, hyalinis ($\cdot 035\text{--}\cdot 05 \times \cdot 004$ mm.).

On leaves of *Rhus copallina* (Rav., 2716). S. Carolina.

Quite different from *Cercospora rhuina*, C. & E.

Cladosporium pericarpium, Cooke in Rav. Amer. Fungi, No. 597.

Effusum, atrum, velutinum. Hyphis intricatis, ramulosis, repentibus, septatis, ramulis assurgentibus, brevibus, fuscis. Sporis cylindraceis, obtusis, 1-3 septatis, ad dissepimentis constrictis, concoloribus ($\cdot 015\text{--}\cdot 025 \times \cdot 005$ mm.).

On husks of walnut (Rav., 2998).

Cladosporium tuberum, Cooke in Rav. Amer. Fungi, No. 600.

Effusum, atro-fuligineum. Hyphis adscendentibus, flexuosis, septatis, fuscis, deorsum obscurioribus. Sporis cylindraceis, 1-2 septatis, obtusis, nec constrictis, fuscis ($\cdot 01\text{--}\cdot 02 \times \cdot 005$ mm.).

On tubers of *Batatas edulis* (Rav., 2844). S. Carolina.

Cladosporium epimyces, Cooke in Rav. Amer. Fungi, No. 596.

Effusum, tenue, fuligineum. Hyphis repentibus, septatis, ramosis, ramulis erectis, teretibus, fuscis, superne pallidioribus. Sporis lanceolatis, uniseptatis, concoloribus, hyalinis ($\cdot 015\text{--}\cdot 02 \times \cdot 004$ mm.).

On pileus of *Agaricus melleus* (Rav., 2761).

Cladosporium fulvum, Cooke in *Rav. Amer. Fungi*, No. 599.

Effusum, lanosum, fulvum. Hyphis erectis, flexuosis, septatis, nodulosis, parce ramosis, fulvis. Sporis ellipticis, uniseptatis, vix constrictis, pallide fulvis, hyalinis ($\cdot 01\text{--}\cdot 02 \times \cdot 0045$ mm.).

On leaves of tomato (Rav., 3112).

Cladosporium lycoperdinum, Cooke in *Rav. Amer. Fungi*, No. 595.

Effusum, fuscum, tenue. Hyphis sparsis, elongatis, flexuosis, septatis, hinc illic geniculatis, pallide fuscis. Sporis cylindraceis, 1-2 septatis, fusco-hyalinis ($\cdot 01\text{--}\cdot 02 \times \cdot 0035$ mm.).

On *Lycoperdon* (Rav., 2794). S. Carolina.

Macrosporium pyrorum, Cooke.

Effusum, atrum, indeterminatum. Hyphis subfasciculatis, erectis, flexuosis, parce septatis, fuscis. Sporis clavatis, stipitatis, superne rotundatis, vel apiculatis, multi-septatis, fuscis ($\cdot 05\text{--}1 \times \cdot 01\text{--}015$ mm.).

On leaves of pear (Rav., 2710). S. Carolina.

Macrosporium erumpens, Cooke in *Rav. Amer. Fungi*, No. 605.

Maculæforme, atris. Cæspites erumpentibus. Hyphis abbreviatis, flexuosis, fuligineis. Sporis obtuse clavatis, merenchymaticis, concoloribus. Stipite abbreviato ($\cdot 07 \times \cdot 017$ mm.).

On dahlia stems (Rav., 2992). S. Carolina.

Little erumpent fascicles on broad black spots.

Macrosporium bulbotrichum, Cooke in *Rav. Amer. Fungi*, No. 604.

Effusum, fuscum, tenue. Hyphis sparsis, abbreviatis, flexuosis, nodulosis, ad basim bulbosis, fuscis. Sporis clavatis, merenchymaticis, concoloribus ($\cdot 05\text{--}06 \times \cdot 014\text{--}02$ mm.).

On *Canna Indica* (Rav., 2815). S. Carolina.

Macrosporium solani, Cke.

Epiphyllum. Maculis determinatis, pallidis, ellipticis, irregularibus, confluentibusve, circinato-striatis; hyphis brevibus, vel obsoletis. Sporis clavatis, longe stipitatis, 4-6 septatis, pallide fulvis, ($\cdot 06\text{--}07 \times \cdot 01$ mm. sine stipite.)

On leaves of *Datura stramonium*, and tomato. S. Carolina (Rav., 3344, 3343).

Sporessimilar in this and *M. asclepiadeum*, but habit very different. In the present species seated on different spots, and very slightly coloured; in the other forming black, effused, irregular patches.

Macrosporium asclepiadeum, Cke.

Atrum, velutinum, effusum, indeterminatum. Hyphis gracilibus, elongatis, septatis, pleurumque simplicibus, fuscis. Sporis clavatis, longe stipitatis, 5-7 septatis, hinc illic loculis divisis, pallide fuligineis, ($\cdot 06\text{--}07$ (sine stipite) $\times \cdot 01$ mm.).

On stems and leaves of *Asclepias amplexicaulis*. S. Carolina (Rav., 3333).

Macrosporium tomato, Cooke in *Rav. Amer. Fungi*, No. 603.

Orbiculare, atrum. Hyphis abbreviatis, robustis, flexuosis, septatis. Sporis clavatis, superne leniter attenuatis, deorsum vix stipitatis, merenchymaticis, fuscis ($\cdot 1\text{--}12 \times \cdot 02\text{--}022$ mm.).

On ripe tomatoes (Rav., 3099). S. Carolina.

Macrosporium cæspitulum, Cooke in *Rav. Amer. Fungi*, No. 609.

Erumpens, fasciculatum. Hyphis in fasciculos densos congestis, flexuosis, septatis, fuscis. Sporis clavatis, breviter stipitatis, 5-7 septatis, hinc illic transverse divisis, fuscis ($\cdot 05\text{--}\cdot 07 \times \cdot 015$ mm.).

On asparagus stems (Rav., 3095). S. Carolina.

Mystrosporium polytrichum, Cooke in *Rav. Amer. Fungi*, No. 610, 611.

Effusum, velutinum, atrum. Hyphis fasciculatis, erectis, flexuosis, septatis, fuscis. Sporis terminalibus, clavatis, 4-7 septatis, merenchymaticis, concoloribus ($\cdot 04\text{--}\cdot 05 \times \cdot 012\text{--}\cdot 016$ mm.).

On stems of dahlia, *Solanum melongena*, *Hibiscus esculentus*, *Cassia*, *Convolvulus*, on leaves of *Gladiolus*, on fruit of rose apple, on capsules of *Gossypium*, and on legumes of *Cassia occidentalis* and *Phaseolus* (Rav., 2997, 2769, 2809, &c.). S. Carolina.

Epochnium quadratum, Cooke in *Rav. Amer. Fungi*, No. 773.

Hypophyllum, in maculis indeterminatis atris oriundum. Hyphis repentibus, ramosis, nodulosis, fuscis. Sporis quadratis, cellularum quatuor globosarum compositis ($\cdot 02$ mm. diam., cell $\cdot 01$ mm.).

On leaves of *Fraxinus* (Rav., 3388). Darien, Georgia.

Epochnium botryoideum, Cooke.

Tenue effusum, atrum, indeterminatum. Hyphis repentibus, septatis, ramosis, fuscis. Sporis subellipticis ($\cdot 04 \times \cdot 015$ mm.), cellularum plurimum globosarum compositis, fuscis.

On logs (Rav., 4017). Darien, Georgia.

Psilonia aterrima, Cooke.

Aterrima, lineato-maculata, erumpens. Hyphis erectis, rigidis, subulatis, parce septatis. Sporis ad basim immixtis, globosis, lævibus, atris ($\cdot 008$ mm. diam.).

On *Gynierium argenteum* (Rav., 3141).

Threads about $\cdot 5$ mm. long, and of the diameter of the spores at the base, attenuated upwards.

Camptoum cuspidatum, Cooke & Hark.

Atrum, in cæspitibus hemisphericis congestum. Hyphis simplicibus, septatis, internodis collapsis, subhyalinis. Sporis lunatis, cuspidatis, fuscis ($\cdot 03 \times \cdot 009$ mm.) inpersis.

On *Scirpus* (Harkness, 2071, 2085). California.

Stachybotrys sub-simplex, Cooke *Rav. Amer. Fungi*, No. 775.

Effusum, atrum. Hyphis simplicibus, erectis, tenuibus, septatis, superne lobato-capitatis. Sporis globosis, lævibus, atrofusis, ($\cdot 006$ mm. diam.).

On *Musa* (Rav., 3368). Darien, Georgia.

Sporocybe digitata, Cooke.

Sparsa, atra. Hyphis rigidis, erectis, septatis, superne breviter digitato-lobatis. Sporis globosis, lævibus, atrofusis ($\cdot 009$ mm. diam.).

On sheaths of *Zea mays* (Rav., 3). Florida.

SACCARDO'S SYLLOGE FUNGORUM.

We are glad to announce the publication of the second volume of this work, but any detailed criticism can only result from a careful examination. We have no occasion to repeat our strictures on the *system*, and as for its application we seem to recognise deficiency in practical acquaintance with the Extra-European species, which has already been commented upon in this Journal.

The third volume is announced for next year, and will contain the *Sphaeropsidæ*, *Melanconicæ* and *Hyphomycetæ*. We hope, on various grounds, that we shall have no primary divergence of opinion as to the basis of classification in these lower fungi, and shall be able to welcome the third volume with increased satisfaction. From an outline of the scheme in "*Michelia*," we gather what will be the aspect of the group called—

MICRONEMEÆ,

which includes the *Torulaceæ* and the *Sporidesmiaceæ*.

I. AMEROSPORÆ, Sacc.

Conidia continuous, globose, ovoid, or oblong, dark coloured.

a. *Conidia catenulate*.1. *Torula*, Pers.

And here we would hope that some attempt will be made to separate such species as *Torula hysterioides* Corda, and one or two others, which are certainly aberrant forms of *Torula*.

2. *Heterobotrys*, Sacc.3. *Hormiscium*, Kunze.β. *Conidia in glomerules*.4. *Echinobotryum*, Corda.γ. *Conidia single*.5. *Coniosporium*, Link.

But wherefore not *Conisporium* as Link published it? Moreover we should have preferred the retention of *Gymnosporium* Corda, as better known, and less likely to cause confusion by a similarity of names.

II. DIDYMOSPORÆ, Sacc.

Conidia ovoid, or oblong, uniseptate, brown.

a. *Conidia catenulate*.6. *Bispora*, Corda.β. *Conidia single*.7. *Dicoccum*, Corda.

To this genus belongs *Dicoccum diplodium*, which is the *Sporidesmium diplodium*, Cooke.

III. PHRAGMOSPORÆ, Sacc.

Conidia 2 or more septate, elongated.

a. *Conidia concatenate*.

8. *Septonema*, Corda.

β. *Conidia single*.

9. *Clasterisporium*, Schweinitz.

This should not be *Closterosporium*, as written by Saccardo. There is no justification for thus altering an author's name.

10. *Bactrodesmium*, Cooke (perhaps including *Hymenopodium*, Corda) for the reception of several species with clavate, multi-septate, but not muriform spores, hitherto united with *Sporidesmium*; such as *S. abruptum*, B. & Br. *S. spilomeum*, B. & Br., &c.

11. *Ceratophorum*, Sacc.

12. *Gyroceras*, Corda.

13. *Ceratosporium*, Schweinitz.

This has priority of *Hirudinaria*, Ces., and to it should be referred *Sporidesmium digitatum*, Cooke.

14. *Stigma*, Sacc.

We do not trace *Polydesmus*, D.R. & M., in this arrangement.

IV. DICTYOSPORÆ, Sacc.

Conidia, globose or oblong, muriformly septate.

a. *Conidia concatenate*.

15. *Sirodesmium*, D. Not.

We do not see *Trimmatostroma*, Corda, recognized as distinct from *Coniothecium*. Part of *Sporidesmium*, indeed a large part, belong to this section instead of the next, as the conidia are normally concatenate.

β. *Conidia single*.

16. *Sporidesmium*, Link. (not *Sporodesmium*).

17. *Tetraploa*, B. & Br.

18. *Dictyosporium*, Corda.

Speira, Corda.

We do not agree with placing this genus here, its affinities are with the *Amerosporæ*.

19. *Stigmella*, Lev.

20. *Coniothecium*, Corda.

We have made these suggestions in advance, rather than have to urge them after the work is complete.

M. C. COOKE.

CLASSIFICATION OF THE UREDINES.

The Editor has said more than once that controversies upon matters mycological lead to no good; and, believing him to be right, I will only say that I have read carefully his remarks on p. 151. During the past summer I have been working at the physiology of the Uredines, and although I do not intend here to give the details of my experiments, I wish to point out—

(1) That the teleutospores of *Uromyces poæ*, *Rbh.* which previously had not been met with in Britain, have been found abundantly this year on *Poæ trivialis* and *P. pratensis* wherever their grasses grow near *Æcidium ficariæ*.

(2) That the *Æcidium* upon *Ranunculus repens* is connected with *Uromyces poæ*, and not, as was stated in my paper, with *Uromyces dactylidis*.

(3) That *Æcidium rumicis* is connected with *Puccinia arundinacea*; and that the *Æcidium* has followed the infection with *Puccinia Arundinacea* spores upon *Rumex obtusifolius*, *crispus*, *hydrolapathrum* and *conglomeratus*, and upon the common rhubarb.

(4) That up to the present time sowing the spores of *P. arundinacea* and *P. Magnusiam* on *Rumex acetosa* has with me produced no *Æcidium*.

(5) That as no *Puccinia* occurs on gooseberry leaves in this country it is clear *Æcidium grossulariæ*, as we find it, is not a *Pucciniopsis*, but is probably a heterœcismal species.

CHARLES B. FLOWRIGHT.

7, King Street, King's Lynn,
Aug. 15, 1883.

NEW BRITISH FUNGI.

By M. C. COOKE.

Polyporus (Merisma) umbellatus, *Fr. Hym. Eur.* 537.

Very much branched, between fibrous and fleshy, rather tough; pilei very numerous, entire, umbilicate; stems elongated, distinct, coalescing at the base; pores minute, white.

On stump. Epping (J. English), July 19.

Cluster about 7 by 5 inches, but immature. A most interesting addition to the British Flora.

Ramularia didyma, *Ung. Exanth. (Didymaria Ungerii, Sacc. in Michelia II., 360.)*

On leaves of *Ranunculus repens*. Abridge, Essex, June 23, 1883.

Helminthosporium Bloxami, *Cooke.*

Thinly effused, black; threads erect, rigid, opaque, thin, simple, or in a few instances furcate, slightly swollen, almost bulbous at the base; spores terminal, elliptical-clavate, three-celled, brown, with a thin epispore ($0.025-0.027 \times 0.012-0.014$ mm.).

On naked wood. Twycross (*Bloxam*).

Threads longer and rather more robust than in *H. obovatum*; septa just visible in the upper part of the thread, but concealed below; spores elliptical, three-celled, the lowest cell small, the other two nearly equal, rounded above.

Helminthosporium tingens, Cooke.

Lignicolous. Thinly effused, black, tinging the matrix deeply of a purplish rose colour; threads long, rigid, straight, simple, septate, with the cells abbreviated so as to be little longer than broad, brown; spores mostly terminal, elliptical-clavate, 3 (rarely 4) septate, paler than the threads; epispore thin (0.03×0.01 mm.).

On rotten wood. Staunton.

Whether the stain of the wood is really due to the mould is difficult to determine, or whether, if so, it is a permanent character. The other features are, nevertheless, quite distinct enough to warrant its being recognised as a good species.

Cercospora moricola, Cke. in *Greillea* XII., p. 30.

On mulberry leaves. Clevedon.

SOME EXOTIC FUNGI.

By M. C. COOKE.

We will commence this small and rather miscellaneous contribution by reference to a *Polyporus*, of which we have not succeeded in finding a published diagnosis. We have therefore copied the description which accompanies the specimens in the Berkeley Herbarium.

Polyporus (Merisma) anax, Berk.

Polyporus very much and intricately branched, the branches terminating in numerous frondose lobed pilei of various forms and sizes, imbricating and confluent, of a dusky grey, or lead colour, and somewhat downy or minutely fibrous above. The pores are white, varying in size and form, but mostly large and angular. The substance is coriaceous, brittle when dry. The smell is like that of mice, when it is in a dry state, but when moist almost inodorous.

Found at the base of a dead stump, branching out from a thick single stem at the base, until at the top it formed a large head of branches and lobed pilei quite 16 inches in diameter. Ohio, U.S. Herb. Berk., No. 2458.

Spathularia velutipes, Cke. & Farlow.

Gregaria. Clavala spathulata, compressa, lævis, aurea. Margine subundulato. Stipite æquali, cavo, badio-velutino. Ascis clavatis, stipitatis. Sporidiis filiformibus, curvulis, flexuosis, hyalinis (0.06 mm. long). Paraphysibus filiformibus.

In swampy ground, Shelburne, and Lake Willoughby, Vermont, U.S.A.

The stem is velvety throughout its length and bay-brown, by which it may readily be distinguished from *S. flavida*.

Ailographium lituræ, Cke.

Epiphyllum. Maculis orbicularibus, fuscis. Peritheciis linearibus, curvulis rectisve, atris, in maculis insidentibus; labiis conniventibus. Ascis saccatis. Sporidiis biglobosis, uniseptatis, fuscis ($.0075 \times .0035$ mm.).

On leaves of *Quercus aquatica*. Texas (Rav., 161).

Cordyceps insignis. Cke. & Rav.

Livido-purpurea. Stipite recto (3-4 cm.) pallido, sulcato, æquali, capitulo subgloboso, ovato, e peritheciis leniter asperulo. Peritheciis minimis, confertis, ovatis, ostiolo punctiformi, obscuriore. Ascis cylindraceis, longissimis (.6 mm.). Sporidiis filiformibus (.45 mm.) frustulis (.012 mm. long) dissilientibus.

On dead larvæ buried in the ground. Seaboard of South Carolina, U.S. (Ravenel, 3251).

Somewhat resembling *C. entomorrhiza*, but larger and more robust. Stem about 4-5 mm. thick and longitudinally sulcate. Capitulum $1\frac{1}{2}$ cm. long, and 1 cm. broad, livid purple. In many respects reminding us of *Cordyceps capitata*.

Pleospora Paronychiæ. Cke.

Epiphylla, sparsa. Peritheciis globosis, prominulis, papillatis, semi-immersis, minimis. Ascis clavatis; sporidiis fusiformibus, centro constrictis, multiseptatis, muriformibusque, atrofuliginis, demum opacis ($.03 \times .01$ mm.).

On fading leaves of *Paronychia serpyllifolia*. Luchon, France.

The sporidia when mature are so dark and opaque that the septa are masked in the ascus; they appear black and uniseptate; in earlier conditions the septa are distinct.

Hendersonia microphylla. Cke.

Peritheciis membranaceis, fuscis, globoso-compressis, sparsis, semi-immersis, sporis cylindraceis-obtusis, rectis, triseptatis, pallide fuscis ($.015 \times .0035$ mm.).

On fading leaves of *Paronychia serpyllifolia*. Luchon, France. (1827).

In company with a *Pleospora* and a *Sphærella*.

Helminthosporium Mauritanicum. Cke.

Effusum, tenue, sub-velutinum, atro-fuscum. Hyphis erectis, simplicibus, crassiusculis (.01 mm.), fuscis; deorsum opacis, atris, sursum pallidiore, septatis. Sporis terminalibus, lateralibus, sparsisve, clavatis, pellucidis, pallide fuscis, demum 5-7 septatis ($.05 \times .018$ mm.), episporio tenui.

On twigs and herbs. Mauritius.

The threads are thick and rigid, almost as in *H. macrocarpum*, but the spores resemble those of *H. apiculatum*. The spore membrane is very thin, and the septa often indistinct.

Cercospora Timorensis. Cke.

Epiphylla. Maculis orbicularibus, brunneis. Hyphis brevissimis, hyalinis, subfasciculatis. Sporis linearibus, superne attenuatis, flexuosis, 3-4 septatis, hyalinis ($.05 \times .001$ mm.).

On leaves of *Ipomœa cymosa*. Timorlaut. Dr. A. B. Meyer.

Cercospora Protearum. *Cooke.*

Epiphylla vel amphigena. Maculis orbicularibus, fuscis. Fasciculis hyphorum dense congestis, ærugineo-fuscescentibus, sporis magnitudine, vix septatis. Sporis cylindræis, obtusis, 3-5 septatis, rectis, curvulis, flexuosisve, ærugineis.

Var. **Leucospermi.** Sporis $\cdot 05\text{--}\cdot 06 \times \cdot 008$ mm.

On *Leucospermum conocarpum* (No. 1456).

Var. **Leucodendri.** Maculis obscurioribus. Sporis hyphisque minoribus pleumque 3 septatis ($\cdot 035 \times \cdot 007$ mm.).

On *Leucodendron argenteum* (No. 1457). Cape of Good Hope. McOwan.

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A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY
AND ITS LITERATURE.

NEW BRITISH FUNGI.

By M. C. COOKE.

(Continued from p. 37.)

Agaricus (Tricholoma) duracinus, Cooke.

Pileus fleshy, compact, firm, dry, smooth, shining, convex, broadly umbonate, cinereous, margin involute; stem solid, attenuated upwards, striate below, reticulate squamose above, rather paler than the pileus; flesh nearly white; gills narrow, crowded, emarginate, arcuate, *cinereous*.

On the ground, under cedar. Kew Gardens, Oct., 1883.

Pileus 3 inches diam. Stem 3 inches long, $1\frac{1}{4}$ inch thick at the base, nearly an inch at the apex. Fleshy disc nearly an inch thick. Gills little more than a line (scarcely one-eighth of an inch) broad. Upper part of the stem minutely squamose in a peculiar reticulated manner. Whole fungus cinereous and firm. Allied to *Ag. tigrinus*, Fr.

Agaricus (Mycena) leucogalus, Cooke.

Cæspitose. Pileus membranaceous, campanulate, umbonate, *sulcate* to the middle, purple brown, paler at the margin, becoming black at the umbo, milk white, plentiful; stem slender, a little thickened downwards, fistulose, of the same colour as the pileus, whitish tomentose at the base; gills adnate, with a small decurrent tooth, rather distant, connected by veins, *cinereous*.

On rotten stump. Kew Gardens, Oct. 9, 1883.

Pileus half an inch broad and high, not exceeding an inch. Stem 3 inches long, forming dense cæspitose tufts. Very similar in general appearance to *Ag. pullatus*, B. & Cke., but belonging to a different section. It could not be retained as a mere variety of *Ag. galopus*.

Cortinarius (Phlegmacium) napus, Fr. Hym. Eur. 343.

Pileus fleshy, convex, then plane, smooth, glutinous, margin broken; stem solid, equal, smooth, ascending from an obconic, oblique, marginate bulb, flesh-white; gills emarginate, broad, rather distant, crisped, whitish, then dingy.

In pine woods. Woolhope Foray, 1883.

Cortinarius (Phlegmacium) purpurascens, var. sub-purpurascens, Fr. Hym. Eur. 346.

Pileus thinner than in the type form, slightly virgate, growing pale; stem stuffed, nearly equal, white, with a bluish tinge; bulb somewhat marginate; gills cinnamon, and, as well as the flesh, becoming purple when bruised.

On the ground. Epping Forest, Oct., 1883.

Cortinarius (Phlegmacium) fulmineus, Fr. Hym. Eur., 347.

Pileus compact, convex, then plane, viscid, marked with agglutinated scales, shining; stem solid, stout, yellow, naked, with a white cortinate veil at the apex; bulb broad, rooting; gills rounded, crowded, at first pure yellow.

In shady woods. Ledbury.

Cortinarius (Phlegmacium) orichalceus, Batsch.

Pileus fleshy, becoming flattened, smooth, with a viscid pellicle, disc rubiginous, cracking in scales, margin becoming livid; stem solid, equal, fibrillose, yellowish, with a marginate bulb; gills somewhat adnate, broad, sulphureous, becoming greenish.

Under trees. Lyndhurst, New Forest.

Cortinarius (Myxacium) arvinaceus, Fr. Hym. Eur. 354.

Pileus fleshy, soft, becoming plane, smooth, viscid, margin spreading; stem tall, cylindrical, silky-viscid, white, then yellowish; gills adnate, decurrent, broad, even, straw-coloured, then ochraceous.

In beech woods.

Cortinarius (Dermocybe) miltinus, Fr. Hym. Eur. 369.

Pileus fleshy, thin, convex, bay-cinnamon, soon quite smooth and shining; stem hollow, equally attenuated upwards, cinnamon, clad with reddish fibrils; base thickened, white, tomentose; gills adnate, narrow, plane, crowded, ferruginous.

In mixed woods. Ledbury.

Cortinarius (Dermocybe) infucatus, Fr. Hym. Eur. 372.

Bright yellow. Pileus fleshy, convex, obtuse, silky when dry; stem solid, attenuated from the clavate base, fibrillose, paler, gills adnate, crowded, linear, fulvous then cinnamon. Flesh white.

On the ground. Haywood Forest, Hereford.

Lactarius scrobiculatus, Fr. Hym. Eur. 422.

Pileus fleshy, depressed, without zones, yellow, margin involute, villose, stem hollow, thick, scrobiculate spotted, gills thin, crowded, whitish, milk white then sulphury yellow.

On the ground. Near Bristol. (C. Bucknall.)

Lactarius capsicum, Schulz. Fr. Hym. Eur. 428.

Pileus compact, pulvinate, chestnut colour, margin narrowly involute; stem solid, firm, whitish, striate with brownish or reddish fibrils, gills adnate-decurrent, rather crowded, tawny, approaching to orange; milk white, acid.—*Kalch, Icon. Hung. t 26, f. 1.*

On the ground. Dumfries (Rev. F. Stevenson.)

Russula citrina, Gillet. *Hym. Supp.* 6.

Mild. Pileus fleshy, convex, more or less a little depressed in the middle, rather viscid when moist, smooth, a little wrinkled at the margin when old, of a bright citron yellow, ordinarily uniform, sometimes a little lighter at the margin, and occasionally also slightly tinted greenish (5-10 cent. diam). At length the centre of the pileus is discoloured and takes a pale ochraceous tint; the epidermis is easily raised at the margin of the pileus. Gills white, slightly decurrent, bifurcate at the base, and occasionally also in the middle, broader at the marginal extremity, insensibly attenuated towards the base. Stem solid white, striate, equal, or a little attenuated at the base, straight, or slightly flexuous; flesh white, rather firm; odour almost none; taste sweet, or very slightly acrid.

In mixed woods. Autumn.

Boletus aurantiporus, Howse.

Pileus at first fulvous ferruginous then pale gilvous, pulvinate then expanded, viscid, at length squamulose about the margin; stem equal, beautifully reticulated with yellow and red, tubes deeply decurrent, pores broad, angular, golden yellow then orange, *turning red when bruised*, flesh becoming slightly reddish.

Under trees. Near Shere. (*Rev. G. Sawyer.*)

Pileus about 2 inches broad, stem 3 inches long.

Boletus granulatus, Fr. var. **tenuipes**.

Pileus gilvous, viscid, streaked with minute fibrils when dry, stem $3\frac{1}{2}$ inches long, attenuated at the base, yellow, becoming rufescent, pores aduate, with faint decurrent lines on the top of the stem, flesh under the pileus roseate pink.

On the ground. Monks' Wood, Epping.

Intermediate between *B. bovinus* and *B. granulatus*, with some of the features of both, and not readily to be referred to either. The Rev. M. J. Berkeley considers that it approaches most to *B. bovinus*, but the pores are smaller, and the tubes are shortened as they approach the stem.

Peziza (Sepultaria) hybrida, Sow.

It must always remain a question of individual opinion as to what is really the *Peziza brunnea* A. and S. and the *Peziza hybrida*, Sow., and whether both are the same species. Recently Mr. Cedric Bucknall has submitted to us specimens of a *Peziza* which, in our opinion, approximates most closely to the species of Sowerby of anything we had previously seen. It was found growing between paving stones in an area at Bristol. In size attaining three-quarters of an inch in diameter. The disc orange red, but not deep; externally brown, clad with fascicles of rather rigid, straight-pointed hairs ($2 \times .008$ mm.). Sporidia elliptic ($.016 \times .008$ mm.). The nearest approach in the size of sporidia to this species is the *P. umbrata*, Fr. (*Mycographia*, fig. 137), but here all similarity ceases. The size is very much greater, the external hairs are fasciculate and straight as in *P. gregaria*,

and not delicate, and flexuous as in *P. umbrata*. The habit and structure is that of the section *Sepultaria*, and not of *Scutellinia*. The figures given by Sowerby represent the species very well except that the disc is hardly so bright. All circumstances considered, we feel satisfied that it is most probable this is really the missing species. How far this may be regarded as identical with the *Peziza brunnea*, A. and S., may after all remain doubtful; we are prepared to accept it, meanwhile, as the *Peziza hybrida* of Sowerby.

***Peziza (Sclerotinia) sclerotiorum*, Lib.**

It is to be regretted that by some error this species has been described over again in the *Gardeners' Chronicle*, under the name of *Peziza postuma*, Berk. and Wils. From a careful examination of fresh specimens, we can trace no difference.

***Cenangium phæosporum*, Cooke.**

Scattered, crumpled, clove-brown, about 1 mm. diam., shortly stipitate, externally rather delicately furfuraceous, attenuated downwards into the darker stem, margin a little incurved, disc nearly of the same colour. Asci elongated clavate, sporidia uniseriate, smooth, clear brown (0.12×0.08 mm.). Paraphyses thick, clavate, brown above.

On sycamore bark. Exeter (*E. Parfitt*).

***Hypospila (Linospora) viburni*, Bucknall.**

Epiphylla, sparsa, nigricans. Pseudo-peritheciis convexis, subrugosis, folii innatis, prominentibus, astomis, suborbicularibus, cellulosis. Ascis cylindræis, octosporis. Sporidiis stipatis, filiformibus, hyalinis (16 mm. long).

On dead leaves of *Viburnum lantana*, near Bristol (*C. Bucknall*).

Closely allied to *Hypospila populina*, Fr., and, in the arrangement of Saccardo, it would be placed with it in the section *Ceuthocarpon* of *Linospora*.

NOTES ON ALKALOIDS AND OTHER SUBSTANCES THAT HAVE BEEN EXTRACTED FROM FUNGI.

BY CHAS. G. STEWART.*

Chemical Laboratory, St. Thomas's Hospital.

The chemistry of Fungi is by no means in a satisfactory state. Many of the existing statements are rendered doubtful by a bad identification of the species. It is also difficult to obtain a sufficient amount of raw material, and its perishable nature interposes another obstacle. Beyond this, the research itself is so difficult and expensive, and the question of profitable result is so remote to ordinary minds, that few qualified chemists have even ventured upon the task. This paper offers little that is original on

* Read at the Woolhope Club, Hereford, October 3rd, 1883.

the subject. I have only endeavoured to collect together such facts as were scattered in chemical literature, and to explain them as untechnically as was possible with due regard to exactness and truth. This must be my apology if to some I seem too elementary, and to others too abstruse.

Assuming that all plants are built up of cells, and that the essential parts of a cell are the *cell-wall*, and the *cell contents* (or protoplasm), we may assert that the cell-wall mainly consists of one of the varieties of cellulose, a colorless, tasteless substance insoluble in water, existing in three forms:—*Cellulose proper*, as found in cotton; *paracellulose*, existing in some roots and the epidermis of leaves; and *metacellulose* or *fungin*, occurring in fungi and lichens. These are distinguished by different solubilities in ammoniated copper solution.

The cell-wall of fungi consists then of this metacellulose or fungin. They contain no lignin or woody fibre. All varieties of cellulose have the composition $C_6 H_{10} O_5$, or a multiple of it.

The cell-contents, on the other hand, are very complex. Of course there is water, varying from 90 per cent., in fleshy species, to 9 per cent. in a woody *Polyporus*. Also essential to life is some variety of fibrin or albumen; substances classed together under the name of "albuminoids," and distinguished by containing nitrogen as well as carbon, hydrogen and oxygen, by their complicated constitution, and the ready changes they undergo under the action of vital forces or of putrefaction. As these substances are especially valuable in food, the nutritive value is in great part indicated by the percentage of nitrogen. This percentage in fungi is very high, higher indeed in dried *Agarics* than in peas and beans, the next articles in this respect. As to the special kinds of albuminoids present in fungi, this has not been made out, but we know that they closely resemble the varieties found in animal food.

Mineral Salts, found as "ash" on burning, are also essential in food. The cells of fungi contain a large proportion. Analyses by Schlossberger and Döpping show amounts of nitrogen varying from 7.2 per cent. in *A. (Psalliota) arvensis*, to 3.2 in *Cantharellus cibarius*; and an "ash," or mineral matter, varying from 19.8 per cent. in *Psalliota arvensis*, to 3.0 in *Polyporus fomentarius*, all calculated on the dried plant.

Another class of substances containing nitrogen are "alkaloids," or organic bases. These do not afford nutriment, but are characterised by poisonous or medicinal action. They are generally present in very small quantities. We will defer their consideration for the present.

Starch and chlorophyll, two prominent constituents of other vegetables, are absent in fungi, but a near relative of the former, *Myco-inulin*, closely resembling the inulin found in *Dahlia* roots, &c., has been discovered in a kind of truffle, *Elaphomyces granulatus*. It is a white, tasteless substance, soluble in hot water, and not blued by iodine. Its formula is $C_6 H_{10} O_5$.

The *Sugars* found in fungi are :—

1. *Mannite*, identical with that extracted from the manna of *Fraxinus ornus* and other kinds of Ash.

2. *Myose* or Trehälose (formula the same as cane sugar, $C_{12}H_{22}O_{11}$), contained in ergot and other fungi, and in a peculiar variety of manna from the East. It is colorless, crystallizable, very sweet and soluble, and ferments with difficulty.

3. An uncrystallizable and easily fermentable sugar resembling honey or treacle (*lævulose*).

Other obscure gummy substances are present, and are classed together as “extractive matters.” They present little interest.

Oils and fats occur in most. Ergot contains 30 per cent., consisting of palmitin, olein, and possibly peculiar fatty acids.

The vegetable acids of fungi comprise citric, malic, fumaric, oxalic, agaricic, and others. *Fumaric acid* is closely related to malic, the acid of apples; it occurs also in *Chelidonium majus* and *Fumaria officinalis*. *Agaricic acid* is a crystallized colorless body, discovered by Fleury (J. Pharm. [4] x, 202) in *Boletus laricis* and *Polyporus officinalis*. Hamlet and Plowright established the presence of oxalate of lime, or acid oxalate of potassium, in 30 species of *Agaricus*. In *Fistulina hepatica* they found 0·083 per cent. of free oxalic acid. See the “Chemical Society’s Journal,” 1879, for other analyses by them. The “fungic acid” of Braconnot and earlier observers is a mixture of citric, malic, and phosphoric acids. Some fungi contain free acetic acid.

Various *resins* have been isolated, but are not well defined.

The *coloring matters* of fungi are often very characteristic, but are chemically still very obscure. Four yellow or orange matters have been made out, distinguished by giving, when viewed through the spectroscope, two absorption bands in the green or blue, differing in position. *Phycoxanthine* is yellow. *Pezizaxanthine* from *Peziza aurantia* is orange. There are also two relatives of the *Xanthophyll* or yellow coloring matter of leaves. All these are destroyed by light, but are not immediately altered by weak acids or alkalies.

A red coloring matter was extracted by Plipson from *Agaricus violaceus*.

From *Polyporus purpuraceus* occurring on oaks, and remarkable for turning violet with ammonia, Stahlshmidt (Liebig’s Annalen, clxxxvii, 177) extracted “*Polyporic acid*,” formula $C_9H_7O_2$, constituting 43·5 per cent. of the dry fungus. It is an ochre-yellow powder, insoluble in water, but soluble with intense violet color in alkalies. It crystallizes from hot alcohol in small plates, having a bronzy lustre. The salts also crystallize. It belongs to the aromatic series, and is related to benzoic acid.

A section of *Boleti*, notably *B. luridus*, contain a yellow coloring matter, which turns blue on exposure to air. Plipson has asserted that this was a derivative of *aniline*. But neither aniline nor its salts have this property. Seeing that the Indigo plant and the

Woad (*Isatis*) contain a yellowish substance called *Indigogen*, which is converted into Indigo-blue on exposure to air, I suggested some years ago that *B. luridus* contained this Indigogen. I extracted about 2 lbs. of the fungus with alcohol, and obtained a brownish yellow extract becoming rapidly blue in air. But indigo is a very stable substance, which may be reduced by organic matter to colorless *Indigo-white*, and then again oxidized to Indigo-blue on exposure, and this transition may be effected any number of times. The pigment of *Boletus*, on the other hand, rapidly passes from yellow to blue, and from blue to brown; while in the blue state it can be again reduced to yellow; but when it has once become brown it seems to be destroyed, as I could not by any means restore the blue color. Indigo gives in the spectroscope a very definite absorption band: in the blue matter of *Boletus* I could not detect any special band. The finally resulting brown matter was amorphous, acid, soluble in water and alcohol, and appeared very similar to the humus-like bodies extracted from peat, &c. It did not contain nitrogen. I could not, however, obtain the blue matter in a pure state on account of its rapid decomposition, but it certainly contains neither indigo nor aniline. It has been stated that *B. cyanescens* yields a brownish yellow pigment, turned deep-blue by sodium hypochlorite, and unaffected by weak alkalies or acids, and that similar reactions occur with *B. luridus*, *Satanas*, *calopus*, and *variegatus*. I found, however, that *B. luridus* was simply bleached, and not blued, by sodium hypochlorite. No cyanogen compound is present.

Now as to the *Alkaloids*. An alkaloid means literally a compound resembling an *alkali*. The alkalis are potash, soda, and ammonia; they have the well-known effects of blueing vegetal reds, of forming salts with acids, of an acrid taste, a soapy feel and characteristic odors. Certain compact groups of carbon and hydrogen, which can pass entire from compound to compound, are thence called *compound radicles*. The alkali ammonia, then, being composed of one atom of nitrogen to three atoms of hydrogen, can have its hydrogen replaced by one or more of these compound radicles. So we form a "*compound ammonia*," or "*amine*." These "*amines*" partake of the characters of the alkali ammonia, and hence are called *alkaloids*. They are generally colorless, alkaline in reaction, and form crystallizable salts by union with acids.

As a rule, they are powerful in their action on the system, hence the plants which contain notable quantities of them are either medicines, poisons, or perhaps condiments like pepper, or semi-medicinal foods like tea or coffee. For this reason their study is a most important feature of plant-chemistry.

From ammonia (NH_3), by substituting the "*compound radicle*" *methyl* (CH_3) for hydrogen, we get a volatile alkaloid *tri-methyl-amine*, a colorless liquid with a powerful fishy odor; in fact it is the cause of the smell of decayed fish, and is extractible from herring-roses, from crayfish, and from other fishy sources. It is

also found in the flowers of *Cratægus oxyacantha*, *Cratægus monogyna*, *Pyrus aucuparia* and *communis*, *Chenopodium vulvaria*, and in some odorous fungi, especially in Ergot of rye, and in putrefying yeast. Probably *Phallus impudicus* and *Clathrus cancellatus* owe their odor to trimethylamine.

The formula of trimethylamine is $\text{N}(\text{CH}_3)_3$ or $\text{C}_3 \text{H}_9 \text{N}$. This group itself forms the nucleus of a series of alkaloids differing from one another by two atoms of hydrogen:—

Betaine, $\text{C}_2 \text{H}_2 [\text{N}(\text{CH}_3)_3] \text{O}_2$ or $\text{C}_5 \text{H}_{11} \text{NO}_2$.

Muscarine, $\text{C}_2 \text{H}_2 [\text{N}(\text{CH}_3)_3] (\text{OH})_2$ or $\text{C}_5 \text{H}_{13} \text{NO}_2$.

Amanitine, $\text{C}_2 \text{H}_4 [\text{N}(\text{CH}_3)_3] (\text{OH})_2$ or $\text{C}_5 \text{H}_{15} \text{NO}_2$.

Betaine occurs in *Beta vulgaris* and *Lycium barbarum*, but has not yet been found in fungi.

Muscarine, $\text{C}_5 \text{H}_{13} \text{NO}_2$, was discovered by Schmeideberg about 1873. In the "Chemische Centralblatt" of 1876, p. 554, occurs his paper establishing its composition and artificial production. It occurs together with amanitine in *Am. muscaria*. The juice is evaporated, treated with alcohol, and then with lead acetate. After a long and complicated process the hydrochlorides of muscarine and amanitine are obtained, and are separated by pressing with paper, which absorbs the more deliquescent muscarine salt, and leaves the amanitine. The yield is very small, as 2 lbs. of the alcoholic extract (representing a very much larger quantity of the fungus, perhaps about 40 or 50 lbs.) gave only about $\frac{1}{4}$ oz. of muscarine.

Muscarine forms a colorless inodorous syrup, crystallizing with great difficulty, easily soluble in water and alcohol, sparingly in chloroform, and not soluble in ether. It is strongly alkaline, forms crystallizable deliquescent salts, and is a strong narcotic, in some respects antagonistic to atropia. [Later researches show that this antagonism of physiological effect is not complete; there are *lateral* actions of each poison which may make a combined dose of each more fatal than the same quantity of either separately, so that its action as an antidote must be carefully watched.] Muscarine has not been obtained from any other natural source, but can be made artificially from amanitine.

Amanitine, $\text{C}_5 \text{H}_{15} \text{NO}_2$ is identical with the animal bases *choline* and *neurine*. Its sources are:—

1. *Am. muscaria*, hence the name *amanitine*.
2. *Bile*, hence the name *choline* (Strecker).
3. *Brain and nerve tissue*, hence the name *neurine*.
4. From eggs and the milt of the salmon, &c.
5. It can be prepared artificially by a complicated process.

It is only of late years that the identity of these products has been proved. Amanitine is chemically called—

"Trimethyloxethylammonium hydrate."

It is a white crystalline substance similar to muscarine, but not so deliquescent, and not so poisonous.

By oxidizing agents, such as strong nitric acid, amanitine is converted into muscarine by the loss of two atoms of hydrogen. By

heat both muscarine and amanitine yield trimethylamine. The passage from muscarine and amanitine to betaine has not yet been effected. The price of muscarine, either natural or artificial, is 1s. per grain. I have not seen amanitine mentioned in a price list, except as choline or neurine.

The singular occurrences of amanitine (neurine or choline) are another link between fungi and the animal kingdom. The production of these bodies artificially is of great interest, as very few natural alkaloids have yet been artificially made; and these successes lead us to hope that we may some day produce such medicinal alkaloids as quinine and morphia by chemical means at a cheaper rate.

I do not know of any other alkaloids from fungi. I remember a paper by Phipson in the "Chem. News" about "*Agaricus violaceus*" (Cortinarius?), which professed to describe two new coloring matters and an alkaloid, but the information was very scanty. The processes are so tedious and costly. I myself tried to obtain an alkaloid from *Boletus luridus*, but failed. It requires about $\frac{1}{2}$ cwt. of raw product to have any chance of success.

Selmi asserts that mildew and the larger fungi give off hydrogen and carbonic acid gas.

Taci (Comptes Rendus, lxxvi, 505) gives the following analysis of *Agaricus* (*Russula*?) *foetens* in percentages:—Water, 67; mannite, 0.6; fibrin (albuminoid matter), 4.6; gum, 1.5; fungin or cellulose, 20; fat, 0.68; ash, 5.13; with acids, coloring and odorous matters undetermined.

THE GENUS ANTHOSTOMA.

By M. C. COOKE.

The genus *Anthostoma*, as adopted by Saccardo in his "Sylloge," cannot be considered by any means satisfactory, from his own point of view. Judging from the heterogeneous mass of species collected in it, one is led to fancy it a sort of "refuge for the destitute," into which all the phæosporous species, not according with the other genera, might find a temporary home. Simple and composite forms almost jostle each other, and such strange companions as the *Sphaeria gastrina* of Fries, the *Halonis cubicularis* of Fries, and some species of *Nummularia* consort together in the same domicile.

If the principle acceded to in other parts of the work, that composite should be kept apart from simple forms, then the second section of the genus must be taken by itself, with a few stragglers from the first section, with the generic name proposed by Nitschke of *Fuckelia* retained. Even with such a modification, there will be less symmetry in the genus than in the analogous one of *Hyphoxylon*, for after all the "idea" of the genus appears to be, that it

corresponds with *Hypoxyylon* in habit and in fructification, but with membranaceous instead of carbonaceous perithecia. If it be correct to take such a view, then *Sphaeria gastrina*, Fr., will be analogous to the pulvinate species of *Hypoxyylon*, and *Diatrype grandinia*, B., to the resupinate species. Even as we have dissected the genus, it is open to strong objection, as the consequence of adopting an artificial standard in the spore. Manifestly, if the species with a membranaceous perithecium are to be separated from those having a carbonaceous perithecium, then the other generic limits should correspond, unless it be contended that a feature held to be of generic value in one instance is inapplicable in the other. Corresponding to *Daldinia*, we have proposed our genus *Sarcoxyylon*, and corresponding to *Hypoxyylon*, we now proceed with *Fuckelia*, but, unless we are greatly mistaken, the genus *Fuckelia*, as represented by the subgenus of the same name, includes either more or less than its analogue *Hypoxyylon*, by embracing Valsioid forms, and excluding effused Hypoxyloid forms, such as *Diatrype grandinia*, B. The only escape from such an anomalous position would have been in the separation and exclusion of all species which did not conform to the habit of *Hypoxyylon*. That is—having accepted the principle that the genus should include only species with simple coloured sporidia and membranaceous perithecia, the rest should follow on the same plan as adopted for species with simple coloured sporidia and carbonaceous perithecia. However we are not prepared to propose the details of any such arrangement, but shall endeavour to make the best of the present.

SARCOXYLON, Cke.

Stroma rather fleshy, pallid, or brightly coloured, subglobose, pulvinate, or depressed, perithecia submembranaceous, sporidia simple, coloured.

A. Sporoderm smooth.

1. *Sarcoxyylon compunctum*, Jungh. 1231.

B. Sporoderm verrucose.

2. *Sarcoxyylon lycogaloides*, B. 1342.

FUCKELIA, Nits.

In previous communications we have had occasion to commence with details of the measurements of the sporidia of species which had not previously been published, but in the present case this will be avoided, as we have no practical knowledge of the only species for which dimensions are not given.

EXCLUSIONS.—The following plants, for reasons already expressed in previous communications, are excluded :—

1133. *Anthostoma eterio* (B. & Br.), which is *Hypoxyylon eterio*, B. & Br.

1135. *Anthostoma conostomum* (Mont.). From authentic specimen just examined this appears to be a genuine *Hypoxyylon* (No. 52a.)

1137. *Anthostoma hypophlæum* (B. & Rav.). This is *Nummularia hypophlæa*, B. & R. See "Grevillea," p. 8.

1140. *Anthostoma rumpens* (Cooke). This is *Nummularia rumpens* (Cke.). See "Grevillea," p. 8.

1141. *Anthostoma Massaræ* (De Not) is, according to authentic specimen, a good *Hypoxyylon*, and must remain as *Hypoxyylon Massaræ*, De Not.

ADDITIONS.—The additions proposed are very few, because, not having this revision in view, no notes have been made, and not having "fungus spores on the brain," we have been content to classify and arrange specimens without any special reference to what we regarded as a specific rather than a generic character. It is just possible, should we find leisure to proceed any further, that amongst others of the old genera some species may be found which would be better localized in this genus, if indeed there is any valid reason for the genus at all.

We may observe in passing, and acknowledge with gratitude, that Prof. Saccardo has, in the Appendix to his last volume, kindly pointed out several typographical errors (p. xlii.) in our communications. We can only regret that we are unable to reciprocate, and return the compliment, since, were we to do so, the list would occupy far more of our space than we can conveniently spare for such a purpose. We nevertheless thank him for his benevolent intentions.

Fuckelia atrofusca, Berk. & Curt. in *Herb. Berk.*, 9004.

Erumpens, pustulis minimis (vix $\frac{1}{2}$ mm.), ellipticis, cortice marginatis. Peritheciis inæqualiter in stromate atro depresso congestis. Ascis cylindricis, stipitatis, sporidiis ellipticis, fuscis ($\cdot 013 \times \cdot 007$ mm.).

On bark of *Rhus glabra*. Virginia mountains, U.S.A.

Fuckelia amplispora, Cooke.

Stromate diatrypoeideo, pustulato, peridermio primo tecto, demum stellato-fissurato, prominulo (1-2 mm. diam.), peritheciis paucis, in singulo stromate, 4-6 monostichis, majusculis globosis, tenuibus. Ascis cylindricis, breviter stipitatis; sporidiis uniserialibus ellipticis, utrinque obtusis, fuscis ($\cdot 016 \times \cdot 01$ mm.).

On bark, probably *Quercus*. United States (75).

Fuckelia Carteri, Berk. and Cooke in *Herb. Berk.*

Erumpens, hemisphærica, demum libera, atra, composita ($\frac{1}{2}$ -1 mm. diam.), stromate corticali primitus fusco velata, peritheciis tenuibus membranaceis, subglobosis immersis, vix papillatis. Ascis cylindræis, substipitatis. Sporidiis ovalibus, atro-fuscis ($\cdot 012 \times \cdot 009$ mm.).

On bark. Bombay (Dr. Carter).

Fuckelia Morsei, Berk. & Curt.*Hypoxyton Morsei*, B. & C. 1441.*Hypoxyton Blakei*, B. & C. 1343.

Not specifically distinct.

Fuckelia insidens (Schwz, in Fr. Syst. Myc. II., 422).

Effusa. stromate subrotundo, innato fusco-nigro, peritheciis emergentibus confertis, ovatis, flexuosis (nec carbonaceis) sub-papillatis. Ascis cylindricis. Sporidiis uniserialibus, ellipticis, pallide fuscis ($\cdot 008 \times \cdot 004$ mm.).

On branches. United States.

Fructification from original specimen. "ex. Herb. Schweinitz."

ARRANGEMENT.—The arrangement adopted in the following list is merely a subdivision into three sections, the first of which includes such species as would have been placed according to the Friesian system in *Diatrype* or *Valsa*; the second contains species with an erumpent pulvinate stroma, analogous to what is seen in many species of *Hypoxyton*; and thirdly, of species in which the distinct stroma is effused, as in other species of *Hypoxyton*, and such of *Diatrype* as *D. stigma*. It may fairly be urged that the first section should not legitimately be included, and in that we should concur, if the rule and practice in other and analogous genera is worth anything; otherwise there is no reason why all *Sphaeriacei* with simple brown sporidia should not be combined into one large genus, irrespective of their mode of growth or external appearance.

A. *Stroma Diatrypoid.*

- | | |
|---|-------|
| 1. Fuckelia Ellisii (Sacc.) | 1146. |
| 2. Fuckelia turgida (P.) | 1128. |
| 3. Fuckelia cercidicola (B. & C.) | 1136. |
| 4. Fuckelia dryophila (Curr.) | 1149. |
| 5. Fuckelia phæosperma (Ellis) | 5936. |
| 6. Fuckelia denigrans (Curr.) | 1148. |
| 7. Fuckelia atrofusca B. & C. | |
| 8. Fuckelia insidiosa (Crouan) | 1139. |
| 9. Fuckelia linosperma (Mont.) | 1132. |
| 10. Fuckelia teniospora (Sacc.) | 1130. |
| 11. Fuckelia adusta (Cke. & Plk.) | 1142. |
| 12. Fuckelia amplispora , Cooke. | |
| 13. Fuckelia amygdalina , Cooke. | 1147. |
| 14. Fuckelia Auerswaldii (Niessl.) | 1138. |
| 15. Fuckelia amæna , Nitschke. | 1145. |
| 16. Fuckelia aceris (Cke. & Ellis) | 1423. |

B. *Stroma pulvinate.*

- | | |
|--|-------|
| 17. Fuckelia microspora (Karst.) | 1143. |
| 18. Fuckelia gastrina (Fr.) | 1129. |
| 19. Fuckelia Plowrightii (Niessl.) | 1134. |
| 20. Fuckelia Carteri , Berk. & Cooke. | |

21. <i>Fuckelia examinans</i> (Berk.)	5247.
22. <i>Fuckelia Morsei</i> (B. & C.)	1343, 1441.
23. <i>Fuckelia Rhenana</i> (Fickl.)	1144.
24. <i>Fuckelia diathrauston</i> (Rehm.)	1385.
25. <i>Fuckelia ostropoides</i> (Rehm.)	1131.

C. *Stroma effused.*

26. <i>Fuckelia decipiens</i> (D.C.)	1126.
27. <i>Fuckelia hiascens</i> (Fr.)	1125.
28. <i>Fuckelia insidens</i> (Schw.)	
29. <i>Fuckelia grandinia</i> (B. & C.)	1114.

NOTE.—*F. decipiens* and *F. hiascens* have the perithecia far too carbonaceous to accord well with the other species. It is, in fact, doubtful if the distinction is a practicable one.

We take this opportunity of supplementing our revision of *Hypoxylon* by the addition of a species which was accidentally omitted.

60* *Hypoxylon polyporoideum*, Berk. in *Herb.*

Pulvinatum, convexo-applanatum, ochraceum, demum rufescens (1-2 cm.). Peritheciis minimis, numerosis, congestis, papillatis. Ascis cylindraceutis. Sporidiis ellipticis, fuscis ($0.12-0.14 \times 0.06$ mm.).

On bark and wood. River Binne, Tschaddi, Africa.

ILLUSTRATIONS OF BRITISH FUNGI.

The second volume of this work is now completed, and the first and second volumes can now be had, bound in cloth, with the plates arranged systematically in the order proposed in the Index.

This is a good opportunity for commencing to take the work by those who are not already doing so. The first two volumes include the section *Leucospori* of the large genus *Agaricus*, and it is hoped that the remainder of the genus will be completed in two volumes of a similar size, now commenced in parts, as before, of which from six to eight will be issued during the year.

PHYCOLOGIA MEDITERRANEA.

Under this title Professor F. Ardissonne has just issued the first volume of a work which promises to be exceedingly useful to algologists, as an Algal Flora of the Mediterranean Sea. This first volume, issued as a memoir by the "Società Crittogamologica Italiana," is in large imperial octavo of 500 pages, and embraces the Florideæ. Professor Ardissonne is already well enough known by his contributions to the Algalogy of the Mediterranean to give authority to his work, and we doubt not it will be accepted generally with considerable satisfaction.

FUNGUS FORAYS, 1883.

The Cryptogamic Society of Scotland held its annual meeting this year at Dumfries, but with what success we have had no report. The time was rather early for Fungi, and consequently they were not numerous. *Lactarius capsicum*, Schulz, was one of the most noteworthy of the "finds."

The Essex Field Club met in Epping Forest for their annual Foray on the 29th of September, but the day proved anything but a pleasant one, and consequently, as the foray was to be confined to less than three hours, the results were not extraordinary. During the greater part of the afternoon a persistent downpour prevented outdoor investigations.

The Woolhope Field Club opened its week of meetings by the arrival of guests on the evening of October 1st, and excursions were planned for the four succeeding days. A detailed account was published in the *Gardeners' Chronicle* for October 13th. The general impression was certainly that in the neighbourhood of Hereford, as well as in some other localities in Britain, the present was by no means a prolific year for fungi. From the North it has been reported that at one time the quantity observed was quite equal, if not above the average. In the New Forest this also seemed to be the case; whilst in Cornwall the number was declared to be less than had been known for many years, and in many parts of the Eastern counties the same complaints were made. In Warwickshire, as far as we could judge, the number both of species and individuals was unusually small. In Epping Forest we have seen during the past Autumn fewer fungi than we have observed for many years. Hence we infer that although the general character of the year in England was unfavourable to the production of a good crop of fungi, there were in a few localities as many as are usually to be found in an excellent year. Fungi would seem to obey no law, or if they do, some law which is at present inexplicable to us, since in one place they have been scarce, and in another plentiful, at the same time.

The character of the Fungus flora around Hereford seemed to be rather marked by the occurrence of numerous species of *Cortinarius*, and at the same time Epping Forest, which usually furnishes several species in considerable numbers, yielded this year only here and there a solitary specimen.

Of the species found around Hereford, the following is an approximate list:—

Cortinarius (Phleg)	. triumphans, Fr.
Cort. . . .	. claricolor, Fr.
Cort. . . .	. sebaceus, Fr.
Cort. . . .	. varius, Fr.
Cort. . . .	. cyanopus, Fr.
Cort. . . .	. anfractus, Fr.
Cort. . . .	. multiformis, Fr.

Cortinarius (Phleg)	. glaucopus, <i>Fr.</i>
Cort. . . .	. calochrous, <i>Fr.</i>
Cort. . . .	. fulgens, <i>Fr.</i>
Cort. . . .	. fulminens, <i>Fr.</i>
Cortinarius (Myx.)	. elatior, <i>Fr.</i>
Cort. . . .	. mucifluus, <i>Fr.</i>
Cort. . . .	. Riederi, <i>Fr.</i>
Cortinarius (Ino.)	. albo-violaceus, <i>Fr.</i>
Cort. . . .	. Bulliardi, <i>Fr.</i>
Cort. . . .	. pholideus, <i>Fr.</i>
Cortinarius (Derm.)	. ochroleucus, <i>Fr.</i>
Cort. . . .	. caninus, <i>Fr.</i>
Cort. . . .	. anomalus, <i>Fr.</i>
Cort. . . .	. miltinus, <i>Fr.</i>
Cort. . . .	. sanguineus, <i>Fr.</i>
Cort. . . .	. cinnamomeus, <i>Fr.</i>
Cort. . . .	. infucatus, <i>Fr.</i>
Cortinarius (Tela.)	. bulbosus, <i>Fr.</i>
Cort. . . .	. torvus, <i>Fr.</i>
Cort. . . .	. scutulatus, <i>Fr.?</i>
Cort. . . .	. armillatus, <i>Fr.</i>
Cort. . . .	. hinnuleus, <i>Fr.</i>
Cort. . . .	. paleaceus, <i>Fr.</i>
Cortinarius (Hydr.)	. subferrugineus, <i>Fr.</i>
Cort. . . .	. castaneus, <i>Bull.</i>
Cort. . . .	. erythrinus, <i>Fr.</i>
Cort. . . .	. decipiens, <i>Fr.</i>

The above is certainly not a list to be despised for a single locality, during four days, of which, of course, some were rainy.

We cannot report so well of other genera, and know little of interest to be recorded.

The Hackney Microscopical and Natural History Society made a successful Saturday afternoon excursion on the Chingford side of Epping Forest on the 13th of October. A record was kept of upwards of 100 species of Hymenomycetes seen and determined, many of which of course were common species. Amongst the rarities was a very peculiar variety of *Boletus*, somewhat intermediate between *B. granulosus* and *B. bovinus*, and scarcely referable to either, which has been called *B. granulatus*, var. *tenuipes*. Besides this was *Ag. (Pleurotus) corticatus*, *Ag. (Pholiota) terrigenus*, and *Ag. (Amanita) spissus*. Several specimens of *Ag. (Clitocybe) cerussatus* were found, and proving agreeable to the taste whilst raw, were cooked and eaten, thus adding another, and an excellent one, to the list of edible species.

The Hertfordshire Natural History Society held their annual Cryptogamic meeting at Watford on Saturday, the 27th October, when a considerable number of species were added to the county list of Fungi, the complaint of the residents being that there were "fewer fungi in the woods this year than for many preceeding

years." Perhaps the most interesting specimens found were some very large *Ag. (Amanita) excelsus*, and a cluster of *Ag. (Hypholoma) storea*.

This completes our brief record of the Fungus Forays of 1883. No frost, in the neighbourhood of London, occurring till the 13th of November, the Fungus season has this year been prolonged later than usual.

ON THE LICHENS IN DR. WITHERING'S HERBARIUM.

BY THE REV. J. M. CROMBIE, F.L.S.

Having recently been engaged in determining Dr. Withering's lichens now in the Herbarium at Kew, I here record the results of my examination. The lichens were contained in a small cabinet, each drawer of which had numerous divisions in which the specimens were arranged according to the order of the "Arrangement of British Plants" (Edition iii.), of which they are illustrative. Amongst the specimens which it contains are many from Dickson, Relhan, Griffith, and not a few from Robert Brown. Those from Dickson are especially interesting and valuable in the absence of his Lichen-Herbarium, of which no trace can be found, though it is no doubt somewhere in existence. Though sometimes, as in all old Herbaria, several distinct species appear under the same name, yet in what follows, the first identification immediately after Withering's own name, may, in most instances, be regarded as exclusively denoting the species, of which he gives his own short diagnosis.

A. Substance like powder.

Of the few species enumerated in this section there are no specimens, but they are evidently, as in other Herbaria, only leprarioid states of other lichens.

B. Crustaceous, granulated.

(1) With Black lines.

L. rugosus = *Dichæna rugosa* (Fr.),—(specimen from Dickson).

L. scriptus = *Graphis scripta* (Ach.),—(specimen from Relhan) and = *Graphis dendritica* (Ach.),—(specimen from Dickson).

Var. 2. = (?) *Hypoxyllum fuscum*, Fr., as it appears, but without spores,—(specimen from Griffith).

(2) With Tubercles.

L. fagineus = *Pertusaria amara* (Ach.), sterile, and *P. globulifera* f. *discoidea* (T. & B.),—(specimens from Dickson).

Var. 2. = *Phlyctis agelæa* (Ach.),—(specimen from Dickson, s.n. *Lichen carpineus*).

L. betulinus. Of this there is no specimen, but it is evidently some young state of a *Pertusaria*.

L. lacteus = *Pertusaria lactea* (Schær.),—(specimen from Dickson: sterile).

L. atro-albus = *Lecidea aglæa* (Smmrft.),—(specimen from Griffith), and = *Lecanora cæsiocinerea* Nyl.,—(specimen on flint from Isle of Wight.)

Var. 2. = *Lecidea decolorans* var. *granulosa* (Whlnb.),—(specimen from Relhan, on peat earth).

L. simplex = *Lecanora simplex* (Dav.),—(specimen on slate from Griffith).

L. calcareus = *Lecanora calcarea* (Ach.),—(specimen from Relhan) and = *Lecidea rimosa* (Dcks.),—(specimen from Griffith), and = *Lecidea contigua* Fr.,—(specimen from Dickson).

L. immersus = *Lecidea calcivora* (Ehrh.),—(specimen from Dickson) and = *Verrucaria calcivora* Nyl.,—(specimen from Relhan).

L. sanguinarius = *Lecidea sanguinaria* (L.),—(specimen from Dickson, corticole). Cfr. Bot. Arr. Ed. 3, iv., pp. 6, 7.

L. graniformis = *Lecidea myriocarpa* (DC.),—(specimens from R. Brown); probably not Dickson's plant.

L. oculatus = *Lecanora oculata* (Dcks.),—(a saxicole fragmentary specimen from Dickson, with the papillæ but little evolute and sterile).

L. muscorum = *Lecidea muscorum* (Sw.),—(specimens from Relhan and Dickson), and = *Lecidea milliaria* Fr.,—(specimens from Griffith).

L. pilularis = *Lecidea contigua* Fr. *minor*, "apotheciis convexis,"—(specimens from Griffith and Davies).

L. gelasinatus, t. xxxi., f. 1. = *Sphinctrina turbinata* (Pers.),—(specimen from Griffith, evidently the plant intended), and = *Lecidea parasitica* (Flk.),—(specimen also from Griffith).

L. cinerascens = *Lecidea speirea* (Ach.),—(specimen from Griffith).

Var. 2. = *Lecanora glaucoma* (Hffm.), with *Arthonia varians* (Dav.), and having the margin of the apothecia subcrenulated,—(specimen from Griffith).

L. confluens = *Lecidea confluens* (Ach.). Of vars. 2 and 3 there are no specimens.

Var. 4. = *Lecidea fusco-atra* (Ach.),—(specimen from Griffith).

Var. 5. = *Lecidea grisella* (Flk.),—(specimen from Griffith).

Var. 6. = *Lecanora badia* (Ach.),—(specimen from Griffith).

L. canescens = *Lecidea canescens* (Dcks.),—(specimens from Dickson, Griffith, and also from Relhan s.n. *Lichen incanus*).

L. caeruleo-nigricans = *Lichen vescicularis* (Hffm.),—(specimens from Dickson, Hort. Sic. 24 and from Relhan).

L. niger = *Pannularia nigra* (Huds.),—(specimens from Griffith). Along with these are other specimens from Griffith and Dickson = *Pannularia triptophylla* (Ach.), sterile.

L. fusco-ater = *Lecidea enteroleuca* (Ach.),—(muricole, at Edgbaston) and = *Lecidea parasema*, Ach. (corticole, at Enville).

Var. 2. Of this there is no specimen.

L. Oederi = *Lecidea declinans* f. *ochromela* (Ach.),—(specimen from Deks. Hort. Sic. n. 24), and = *Lecanora Dicksoni* (Ach.),—(specimen from R. Brown).

L. querneus = *Lecidea querneae* (Deks.),—(specimens from Griffith).

L. geographicus = *Lecidea geographica* (L.),—(specimens from Griffith, sufficiently typical).

L. sulphureus = *Lecanora sulphurea* (Hffm.),—(specimens from Dickson, Turner and Griffith).

L. flavo-virescens = *Lecidea citrinella* (Ach.),—(specimen from Dickson).

Var. 2. = f. *alpina* (Schær.),—(specimen from Griffith with young apothecia).

L. atro-virens = *Lecidea geographica* var. *atrovirens* (L.),—(specimen from Griffith).

L. rupicola = *Lecanora glaucoma* (Hffm.),—(specimens from Dickson and Griffith).

L. compositus t. xxxi., f. 2 = *Lecanora glaucoma* (Hffm.) with *Arthonia varians* (Dav.) parasitical,—(specimen from Griffith). With regard to *L. cinerascens*, *L. rupicola*, *L. compositus* and *L. varians*, cfr. Griffith's remarks in Bot. Arr. Ed. 3, iv., p. 8.

L. fungiformis = *Bæomyces rufus* f. *rupestris* (Pers.),—(specimen from Robson) and also = *Onygena equina* (Pers.),—(specimen from Relhan).

L. rufus = *Bæomyces rufus* (Huds.),—(specimens from Hudson and Relhan).

L. ericetorum = *Bæomyces roseus* (Pers.),—(specimen from Robson, with paler apothecia, whence Withering describes them as flesh-colour).

L. calvus = *Lecanora irrubata* (Ach.) f. *calva* (Deks.),—(specimen from Dickson).

L. vernalis = *Lecidea luteola* (Ach.),—(specimens from Dickson and at Edgbaston), and also = *Lecanora luteoalba* (Turn.),—(specimens from Griffith and at Edgbaston).

Var. 2 = *Lecanora irrubata* (Ach.),—(specimen from Griffith, saxicole).

L. icmadophilus = *Bæomyces icmadophilus* (Ehrh.),—(specimens from Dickson and Relhan).

L. sphæroides = *Lecidea sphæroides* (Deks.),—(specimens from Dickson and Griffith).

L. flavorubescens = *Lecanora aurantiaca* (Lghft.),—(specimen from Dickson).

L. pertusus = *Pertusaria communis* (DC.),—(specimen from Mr. Knapp, Malvern Hills).

L. ventosus = *Lecanora ventosa* (L.),—(specimens from Deks. Hort. Sic. 23, and from R. Brown).

L. coccineus = *Lecanora hæmatomma* (Ehrh.),—(specimens from Deks. Hort. Sic. 24, and from R. Brown).

(3) With *Saucers*.

L. corallinus = *Pertusaria dealbata* (Ach.),—(specimen from Dickson, fertile), and also fragments of var. *corallina* (L.), (probably also from Dickson).

L. parellus = *Lecanora parella* (L.),—(corticole specimens from Deks. Hort. Sic. 23), and (saxicole specimens, Saltash Ferry).

L. crenulatus = *Lecanora umbrina* * *crenulata* (Deks.),—(specimens from Dickson).

L. candicans = *Lecanora* (*Placodium*) *candicans* (Deks.),—(specimen from Griffith).

L. varians = *Arthonia varians* (Dav.),—(specimen from Davies).

L. ater = *Lecanora atra* (Ach.),—(saxicole specimens from Dickson and at Rowdley Hill), and also corticole specimens from Enville = *Lecanora atra* and *Lecanora chlarona* with *Sphaeria epicymatia*, Wallr.

L. subimbricatus = *Lecanora circinata* * *subimbricata* (Relh.), (* *Lecanora subcircinata* Nyl.)—(specimens from Relhan and Dickson).

L. concentricus = *Lecidea concentrica* (Dav.),—(specimen from Griffith).

L. punctatus. Of this there is no specimen.

L. scruposus = *Urceolaria scruposa* (Ach.),—(specimen from Relhan s.n. *Lichen excavatus*), and also = var. *bryophila*, (Ach.),—(specimens from Dickson and Griffith).

Var. 2. Of this there is no specimen.

L. frustulosus = *Lecanora frustulosa* (Deks.),—(a fragmentary specimen from Dickson, not well evolute).

L. atrocinerus = *Lecanora atrocinerea* (Deks.),—(specimen from Dickson), and also = *Lecanora* (*Placodium*) *chalybæum* (Duf.),—(specimen from Robson).

L. gibbosus. Of this there is no specimen.

L. Dicksoni. Of this there is no specimen.

L. pruinatus. Of this there is no specimen.

L. corneus t. xxxi., f. 3 = *Lecidea cornea* (With.),—(three specimens from Griffith). This is the *Lecidea tricolor* (With.), of authors, but erroneously, *vid infra*.

L. pallidus = *Lecanora intumescens* (Rebent),—(specimen from Deks. Hort. Sic. 23).

L. subfuscus = *Lecanora Parisiensis* (Nyl.),—(a corticole specimen from Dickson).

L. lacustris t. xxxi., f. 4 = *Lecanora lacustris* (With.),—(specimen from Griffith).

L. pallescens = *Lecanora subcarnea* (Ach.),—(specimen from Dickson), and = *Lecanora parella* (L.),—(specimen from Relhan),—also = *Lecanora chlorona* (Ach.),—(specimen from Griffith).

L. pezizoides = *Pannularia nebulosa* (Hffm.),—(specimens from Relhan and Griffith).

L. hypnorum = *Lecanora (Psoroma) hypnorum* (Hffm.),—(specimen from Dickson), also = *Pannaria brunnea* (Sw.),—(specimens from Griffith and R. Brown).

L. frigidus = *Lecanora tartarea* var. *frigida* (L.),—(specimens from Dickson, Griffith, and R. Brown).

L. cupularis = *Pertusaria carneopallida* (Nyl.),—(corticole specimen from Griffith), and = *Lecidea cupularis* (Ehrh.),—(saxicole specimen from Griffith). The former of these is evidently the plant intended.

L. crenularius t. xxxi., f. 5 = *Lecanora ferruginea* f. *crenularia* (With.),—(specimens from Griffith and Isle of Wight).

L. exanthematicus = *Lecidea exanthematica* (Sw.),—(specimen from Griffith), and also another from same = *Lecidea cupularis* (young state).

L. marmoreus = *Lecidea cupularis* (Ehrh.),—(specimens from Dickson and Griffith, that from the latter being s.n. *Lichen tricolor* on stone).

L. tricolor t. xxxi., f. 6 = *Lecidea querceti* (Nyl.),—(specimen from Griffith, original and that depicted in tab., bearing on the label "nondescript.") Along with it another specimen from Griffith s.n. *tricolor* = *Lecidea carneola*, (Ach.), with *Hysterium pulicare*, Pers., on the same piece of bark, which very singularly was regarded by him as an old state of the plant, cfr. Bot. Arr. Ed. 3, iv., p. 23.

L. tartareus = *Lecanora tartarea* (L.),—(specimens from Dickson and Griffith).

L. fusco-luteus = *Lecidea fuscolutea* (Deks.),—(specimens from Deks. Hort. Sic. 25*, and from R. Brown, who rightly observes that "Dickson's account of the scutellæ is not accurate").

L. cerinus = *Lecanora cerina* (Ehrh.),—(specimens from Griffith and at Edgbaston Park).

L. quadricolor = *Lecidea decolorans* (Flk.),—(specimen from Dickson).

L. upsaliensis = *Lecanora tartarea* var. *frigida* (L.),—(specimen from Dickson, concerning which Griffith observes—"Is this distinct from the specimens in division 70?" i.e., *Lichen frigidus*).

Upsaliensis of the older British authors is only a more spinulose state of *frigida*).

L. byssinus. Of this there is no specimen.

L. flavicans=*Lecanora* (*Placodium*) *murorum* var. *dissidens*, Nyl.,—(specimens from Dickson s.n. *Lichen flavescens*).

L. luteus=*Lecidea lutea* (Deks.),—(a fragmentary specimen from Dickson).

L. rimosus=*Lecidea rimosa* (Deks.),—specimen from Dickson.

(4) With both *Tubercles* and *Saucers*.

L. Psora=*Physcia cæsia* (Hffm.),—(specimens from Griffith; fertile).

L. gelidus=*Lecanora* (*Placopsis*) *gelida* (L.),—(specimens from Griffith, R. Brown, and Deks. Hort. Sic. 25).

L. decipiens=*Lecidea decipiens* (Ehrh.),—(specimens from Deks. Hort. Sic. 25, from Relhan s.n. *Lichen stellatus* and others from Portugal).

L. lentigerus=*Lecanora* (*Squamaria*) *lentigera* (Webr.),—(specimens from Dickson, Relhan, and from Portugal).

L. candelarius=*Lecanora citrina* (Ach.),—(specimen from Griffith), and=*Lecanora vitellina* (Ehrh.),—(fragmentary specimen from Relhan).

C. *Crustaceous, tiled, spreading, fixed.*

L. leucophæus=*Lecidea syncomistu* (Flk.),—(specimen from Griffith; no doubt also Dickson's plant).

L. obscurus=*Physcia aquila* (Ach.),—(specimens from Griffith and from Dickson, also Hort. Sic. 25).

L. luridus=*Lecidea lurida* (Sw.),—(specimens from Griffith, fertile, and from R. Brown sterile).

L. multifidus=*Parmelia incurva* (Pers.),—(specimen from Dickson with young apothecia).

L. cartilagineus=*Squamaria crassa* (Huds.),—(specimens from Relhan, Robson, and Dickson, also Hort. Sic. 24).

L. muralis=*Lecanora* (*Squamaria*) *saxicola* (Poll.),—(specimens from Dickson, Relhan, and Griffith).

D. *Somewhat crustaceous, leaf-like, tiled, loose.*

L. fahlunensis=*Platysma Fahlunense* (L.), (specimen from Dickson), and=*Platysma commixtum* (Nyl.),—(specimens from R. Brown and Griffith; also Deks. Hort. Sic., 23).

L. squamatus=*Lecanora cervina* (Pers.),—(specimen from Griffith, and evidently the plant intended), and also=*Lecidea lurida* (Sw.),—(specimens from Deks. Hort. Sic. 25).

L. ciliatus=*Physcia ulothrix* (Ach.),—(saxicole specimen from Dickson).

L. stygius = *Parmelia stygia* (L.),—(sterile specimen from Dickson), and also = *Parmelia alpicola* Fr. fil.,—(specimens from Deks. Hort. Sic. 25*).

L. stellaris = (*Physcia stellaris* (L.),—(specimens from Relhan, Dickson, and at Edgbaston Park).

Var. 2 = *Physcia pulverulenta* (Schreb.),—(specimen from Griffith).

Var. 3 = *Physcia pulverulenta* var. *venusta* (Ach.),—(specimen from Edgbaston Park).

Var. 4 = *Physcia ulothrix* (Ach.),—(specimen from Griffith).

L. tiliaceus = *Parmelia tiliacea* (Hffm.),—(a small fertile specimen from Dickson).

L. diffusus = *Platysma diffusum* (Webr.),—(specimen from Deks. Hort. Sic. 23).

L. physodes = *Parmelia physodes* (L.), typical,—(a fertile specimen from Dickson, also one from Portugal).

L. centrifugus = *Parmelia conspersa* (Ehrh.),—(a fertile specimen from Dickson).

L. carnosus = *Pannularia carnosus* (Deks.),—(fertile specimens from Dickson).

L. saxatilis = *Parmelia saxatilis* (L.), typical,—(specimens from Dickson, one of which is fertile).

Var. 2. Of this there is no specimen.

L. fulvus. Of this there is no specimen.

L. omphalodes = *Parmelia omphalodes* (L.),—(fertile specimens from Relhan).

L. parietinus = *Physcia parietina* (L.) typical,—(specimens from Dickson and Relhan).

L. marginalis = *Collema melænum*, (Ach.), f. *marginale* (Huds.),—(specimen from Relhan), and = *C. melænum* typical,—(specimen from Dickson), also = *Collema multipartitum* (Sm.),—(specimen from Griffith).

L. olivaceus = *Parmelia exasperata* (Ach.),—(fertile specimens from Dickson), and = **Parmelia Delisei* (Dub.),—(specimen from Griffith).

Vars. 2 and 3. Of these there are no specimens.

E. *Somewhat crustaceous, cup-bearing.*

L. foliaceus = *Cladonia alpicornis* (Lghft.),—(specimen from Relhan).

Var. 2. Of this there is no specimen.

L. pyxidatus = *Cladonia pyxidata* (L.), f. *simplex* (Roth.),—(sterile specimens).

Vars. 2, 3, and 4. Of these there are no specimens.

(To be continued.)

SPIROGYRA ORTHOSPIRA, Nag.

This interesting species is described at p. 87 of "Fresh Water Algæ," and at that time it was stated that it had only been found in Ireland. We have now to record its occurrence in a pool at Fairsted, Essex, where it was collected by Mr. E. G. Varenne, on the 2nd June, 1883, with the mature zygospores.

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY
AND ITS LITERATURE.

NEW BRITISH FUNGI.

(Continued from p. 44.)

The following species are enumerated in a communication by Messrs. Berkeley and Broome to the "Annals of Natural History," for Dec., 1883:—

Agaricus (Lepiota) licmophorus, *B. & Br. Linn. Journ. XI., p. 500,*
Lepiota flammula, *Gillet. Hymen. France.*

Description is given in the Reprint of the "Handbook," at the end of this number.

Agaricus (Lepiota) illinitus, *Fr. Hym. Eur. 39.*

Penzance (J. Ralfs). Description also as above.

Agaricus (Tricholoma) oreinus, *Fl. Syst. Myc. p. 52. Cooke Illus. t. 218b.*

Agaricus (Tricholoma) atrocinerus, *Pers. Syn. 348. Cooke Illus. t. 52a. Grevillea VIII., p. 73.*

Agaricus (Clitocybe) cyanophæus, *Fr. Hym. Eur. 82, var. Pengellei, B. & Br. Cooke Illus. t. 264.*

Pileus compact, convex, then plane, obtuse, smooth, fuscous, becoming blue; stem solid, smooth, attenuated from the base, when young *bluish, apex abruptly white*; gills very decurrent, crowded, violet, becoming pallid.

In woods. Cornwall.

"It is possible that this form may be specifically distinct; but though it differs so much from the figure given by Gonnerman and Rabenhorst, the characters answer so well to those which are given in Hym. Eur. that we do not at present consider it distinct. It occurred on two occasions; the abrupt white apex of the stem is very remarkable."—*B. & Br.*

Agaricus (Clitocybe) rivulosus, *Pers. Syn. 369. var. neptuneus, Batsch. f. 115. Cooke Illus. t. 200b, vide Grevillea VII., p. 127.*

On dry mountain pastures near the sea.

Agaricus (Collybia) œdematopus, *Schæff. t. 259.*

"The specimens were in a very early stage, and the identification requires confirmation."

Agaricus (Collybia) ozes, *Fr. Hym. Eur.* 125.

Strong scented. Pileus rather fleshy, campanulate, then plane, umbonate, naked, smooth, hygrophanous, margin striate, stem medullate then fistulose, finely striate, slender, fragile, somewhat flexuous, apex mealy; gills adfixed, crowded, cinereous, then sooty-olive.

On pine leaves.

Pileus 1 in. and more, when moist cinereous-fuscescent, when dry pale clay-coloured. Stem $2\frac{1}{2}$ -4 in. long, 1 line thick.

Agaricus (Mycena) metatus, *Fr. Hym. Eur. Grevillea* IV., 168.
Cooke Illus. t. 238.

Agaricus (Mycena) pullatus, *Berk. & Cooke Illus. t.* 237. *Grevillea* XI., 69.

Penzance. "A distinct species."

Agaricus (Omphalia) telmatiaëus, *Berk. & Cooke Illus. t.* 240. **Ag. affricatus**, *Berk.* (not Fries.)

On *Sphagnum*.

Agaricus (Pleurotus) acerinus, *Fr. Hym. Eur.* 175. *Grevillea* XI., 155.
Cooke Illus. t. 291.

On ash, near Morpeth.

Agaricus (Pleurotus) limpidus, *Fr. Hym. Eur.* 177. *Grevillea* x., 149. *Cooke. Illus. t.* 276b.

On decaying wood. Penzance.

Agaricus (Pleurotus) hypnophilus, *Fr. Hym. Eur.* 181. *Cooke Handbook*, No. 135. *Illus. t.* 212c.

On moss.

Agaricus (Leptonia) asprellus, *Fr. Hym. Eur.* 205. *Cooke Handbook*, No. 280.

Amongst grass. Coed Coch.

Agaricus (Eccilia) griseo-rubellus, *Fr. Hym. Eur.* 212.

Pileus membranaceous, deeply umbilicate, at length plane, striate, hygrophanous, umber then hoary, stem fistulose, smooth, paler; gills slightly decurrent, rather distant, pallid, then flesh-coloured.

In pine woods.

Stem 2 in. long. Pileus 1 in. and more broad.

Agaricus (Hebeloma) magnimamma, *Fr. Hym. Eur.* 243.

Pileus with a fleshy disc, extended in a mammiiform umbo, convexo-plane, naked, brick-red, growing pale, stem obsoletely fistulose, equal, smooth, naked, pale gilvous; gills obtusely adnate, crowded, pallid, then ferruginous.

On the ground, amongst grass.

Circumference of the pileus thin, not hygrophanous.

Agaricus (Galera) tener, *Schæff. var. pubescens*, *Fr.*

According to Fries this is *A. pilosellus*, *Pers.*

Agaricus (Tubaria) stagninus, *Fr. Hym. Eur.* 273.

Pileus submembranaceous, conical, then convex, obtuse, rather viscid and striate when moist, ferruginous-bay, when dry even, subochraceous, furnished about the margin with floccose, concentric white scales, stem fistulose, rubiginous-brown, gills decurrent, very broad, ferruginous.

In marshy ground. Sibbertoft. A dwarf form, about the size of *A. inquilinus*.

Agaricus (Crepidotus) applanatus, *Pers. Obs.* 1., p. 8, t. 5. f. 3.

Pileus rather fleshy, soft, fragile, plane, reniform, or wedge-shaped, *whitish*, ending behind in a *very short white tomentose stem*; gills *determinate*, crowded, linear; whitish, then pale cinnamon.—*Fr. Hym. Eur.* 275.

On decaying wood. Penzance.

Agaricus (Crepidotus) haustellaris, *Fr. Hym. Eur.* 276. *Cooke Handbook No. 354.*

With the last.

Agaricus (Crepidotus) Ralfsii, *B. & Br. Ann. Nat. Hist.* (1883), p. 372, No. 2008.

Pileus semi-reflexed, yellow, delicately hispid or chaffy, margin involute, flat, fixed by cottony flocci, stem obsolete, gills ventricose, clay-coloured, margin whitish.

On decaying wood. Penzance.

Agaricus (Psilocybe) subericæus, *Fr. Icon. No. 367, t. 136, f. 2.*
= **A. clivularum**, *Letell.*

Pileus rather fleshy, convex, then plane, even, smooth, tawny; stem fistulose, smooth, becoming yellowish, gills sinuate, adnexed, broad, pallid, then blackish.

In fields, near Chester.

Stem $1\frac{1}{2}$ -2 in. Pileus 2 in. broad or more.

"*Ag. clivularum*, Letell, is referred by Fries to his *Ag. ericæus*, but it is clearly rather his *Ag. subericæus*."

Agaricus (Psathyra) conopileus, *Fr. Hym. Eur.* 304. *Cooke Handbook, No. 422.*

"In various places amongst grass, and in garden borders, varying when fresh in the depth of the brown tint. Near Peterborough it occurred last year with a distinct bulb."—*B. & Br.*

Agaricus (Psathyra) glareosa, *B. & Br. Ann. Nat. Hist.* 1883, p. 372, No. 2011.

Pileus campanulate, obtuse or umbonate, grey, apex pallid chestnut, striate, floccose with shining atoms; stem fistulose, invested with white fibrils, brown, gills broadly adnate, umber.

On gravelly soil, after wet weather. June.

"Pileus $\frac{1}{2}$ in. across, very minutely tomentose; stem 1-2 in. high, 1 line thick; gills broad behind. Spores black. Flesh brown, especially close to the gills."

Agaricus (Psathyra) pellosperrus, *Bull. t.* 561.

"We have certainly had this year the true plant of Bulliard, which seems to us distinct from *A. corrugis*."

Agaricus (Psathyrella) crenatus, *Fr. Hym. Eur.*, 315.

Pileus membranaceous, hemispherical, sulcate, atomate, hygrophanous, *margin crenate*, stem slightly curved, fragile, smooth, whitish, *striate above, and mealy*; gills adnate, somewhat ventricose, from yellowish brown becoming black.

On grassy ground. Penzance.

Coprinus flocculosus, *Fr. Hym. Eur.* 315. *Cooke Handbook, No. 461.*

Coprinus cothurnatus, *Godley in Gillet, Planches, Sup., 3 series.*

[We have as yet seen no published diagnosis of this species.]

Penzance.

Stem about 2in. long; pileus about 1in. broad. Yellowish.

Cortinarius (Telamonia) scutulatus, *Fr. Hym. Eur. 377. Grevillea*
VIII. 77.

"The form figured by Quelet, and not that by Fries in his 'Icones.'"

Cortinarius (Telamonia) stemmatus, *Fr. Hym. Eur. 385.*

Pileus rather fleshy, convex, then plane, obtuse, *bright bay*, about the margin hoary silky, when dry becoming paler, fibrillose; stem somewhat fistulose, floccose, squamose, and annulate, ferruginous bay; gills adnate, crowded, bay-brown.

In moist woods. Lyne, Sussex.

"The ringless form mentioned by Fries in the text."

Cortinarius (Hygrocybe) germanus, *Fr. Hym. Eur. 397.*

Pileus almost membranaceous, conical, then expanded, obtusely umbonate, rather silky, *fragile*, even, brownish (clay-coloured); stem somewhat fistulose, thin, equal, smooth, *lilac*, then becoming *pale*, gills adnate, rather distant, broad, watery cinnamon.

In beech woods. Coed Coch.

Stem 3in. long, 1 line thick. Pileus 1in.

Hygrophorus glutinifer, *Fr. Hym. Eur. 408.*

Pileus fleshy, convex, then expanded, *with a glutinous pellicle, rufescent, disc rugose-punctate*, stem stuffed, *ventricose upwards*, with a *viscid veil*, of the same colour, apex whitish squamulose, gills arched, decurrent, rather thick, white.

In woods. Penzance.

"Probably the same with the little known *Ag. aromaticus*, Sow."

Hygrophorus vitellinus, *Fr. Hym. Eur. 417.*

Pileus membranaceous, disc rather fleshy, smooth, viscid, *lemon-yellow, whitish when dry, margin plicate-striate*, stem fistulose, fragile, pale yellow, gills decurrent, rather distant, egg yellow.

In fields, &c. Penzance.

Lactarius hyginus, *Fr. Hym. Eur. 426. Cooke Handbook, No. 590.*

Near Morpeth.

Lentinus lepideus, *Fr. Hym. Eur. 481. Cooke Handbook, No. 684.*

"In an old hollow elm. The veil still adhering to the edge of the pileus. Specimens found before in this country have been on imported pine wood. The proper name is '*lapideus*,' '*lepideus*' inaccurately."—*B. & Br.*

[We have had it, at least two or three times, on indigenous wood.—*Ed. Grer.*]

Polyporus (Pleuropus) petaloides, *Fr. Hym. Eur. 536.*

Pileus somewhat membranaceous, spatulate, *rugose, zoneless, chestnut-brown*, flaccid when moist; stem lateral, ascending, compressed, smooth, rootless, whitish, *adnate by a dilated scutate base*; pores decurrent, very short, small, white.

"On an old stump. Sibbertoft. A very interesting addition to our mycology, and of great beauty."—*B. & Br.*

Polyporus (Placodermei) fomentarius, *Fr.*, var. **pomaceus**, *Pers. Syn.* 531.

"The common form on willow, which is very hard. Occurs also in Cornwall. This, however, is referred by Fries to *P. igniarius*, the true distinction of which species depends on the difference of the colour of the spores, which are dark and ferruginous, and not white as in *P. igniarius* and *P. dryadeus*."—*B. & Br.*

Polyporus (Inodermei) gossypinus, *Fr. Hym. Eur.* 566.

White. Pileus coriaceous, effused and reflexed, flattened, tomentose, zoneless, substance white, pores at the first dædaleoid, then angular, pale cinerous, dissepiments thin, toothed.—*Leverille Ann. Sci. Nat.* 1843, p. 124.

On an old stump of *Ulex*. Sibbertoft.

"Distinguished at once by its dædaleoid pores. We hoped to get a large supply of specimens this year, but the same stump, which was accidentally trodden down, has produced instead *P. fumosus* in great abundance."—*B. & Br.*

Polyporus (Resupinatus) Læstadii, *Fr. & Berk.*

Substance white, pores bright lemon-yellow, hymenium here and there tuberculate.—*Ann. Nat. Hist.* 1883, p. 373, No. 2025.

On the underside of a deal board in a hothouse.

"Colour bright persistent yellow, very beautiful. We have no doubt that our plant is what is mentioned by Fries (*Hym. Eur.* 575). It forms confluent patches many inches in length."—*B. & Br.*

Hymenochæte rubiginosa, *Lev.* **Stereum rubiginosum**, *Fr. Hym. Eur.* 641.

On decaying wood.

"A very different species from *Stereum tabacinum*."

Stereum stratosum, *B. & Br. Ann. Nat. Hist.* (1883), p. 374, No. 2027.

Effused, bright ochraceous white, smooth, becoming yellowish, here and there rugose, substance pallid, stratoses; the strata at length separating.

On bark. Penzance.

In addition, those authors propose a new genus for the reception of *Agaricus (Clitocybe) laccatus* and its allies, under the name of—

LACCARIA, *B. & Br.*

Substance tough, hymenium confluent with the stem; gills thick, powdered with the white globose spores.

"This is clearly quite as distinct from the genus *Agaricus* as *Russula* and *Lactarius*, and cannot with any justice be included in the sub-genus *Clitocybe*. We have several very distinct forms from Ceylon, besides our own *Ag. laccatus*, *Ag. bellus*, and one or two continental species. The amethyst-coloured form usually referred to *Ag. laccatus* is probably distinct. We have long seen the necessity of this separation, but were unwilling to add to the numerous genera already separated from *Agaricus*, with greater or less reason."—*B. & Br.*

The species which would come under the genus proposed by Messrs. Berkeley and Broome would be—

- Laccaria laccata** (*Scop.*)
- Laccaria tortilis** (*Bolt.*)
- Laccaria amethystina** (*Bolt.*)
- Laccaria bella** (*Pers.*)
- Laccaria spodophora** (*B. & Br.*)
- Laccaria sublaccata** (*B. & Br.*)
- Laccaria porphyrodes** (*B. & Br.*)
- Laccaria vinosofusca** (*B. & Br.*)

ON THE LICHENS IN DR. WITHERING'S HERBARIUM.

BY THE REV. J. M. CROMBIE, F.L.S.

(*Concluded from p. 62.*)

L. fimbriatus = *Cladonia fimbriata* (Hffm.),—(sterile specimens).

Vars. 2 and 3. Of these there are no specimens.

L. gracilis = *Cladonia gracilis* (*chordulis* Flk.),—(sparingly fertile specimens).

L. radiatus = * (*Cladonia fibula*, var. *radiata* (Schreb.),—(sterile specimens).

L. ventricosus. Of this there is no specimen.

L. deformis. Of this there is no specimen.

L. filiformis = *Cladonia macilenta* (Hffm.) f. *filiformis*,—(specimen from Relhan, sparingly fertile).

Var. 2. Of this there is no specimen.

L. cocciferus = *Cladonia coccifera* (L.),—(sterile specimens) and = *Cl. Floerkeana* (fertile specimens from Dartmoor).

L. cornutus = *Cladonia macilenta*, a state approaching to f. *clarata* (Ach.),—(specimen from Griffith) and = f. *scolecina* (Ach.),—(specimen from Edgbaston Park pales; substerile).

L. digitatus = *Cladonia macilenta* var. *coronata* (Ach.),—(specimen from Relhan). Along with this is *Cl. squamosa* (Hffm.),—(specimen from Dickson with dark-brown apothecia).

L. cornucopioides = *Cladonia coccifera* f. *cornucopioides* (Ach.),—(fertile specimens).

F. *Somewhat crustaceous, Shrub-like.*

L. siliculosus = *Ramalina cuspidata* (Ach.),—(specimens from Dickson and R. Brown).

L. globiferus = *Sphærophoron coralloides* (Pers.),—(fertile specimens from Dickson and Griffith).

L. fragilis = *Sphærophoron compressum* (Ach.),—(specimens from Deks. Hort. Sic. 23).

L. vermicularis=*Thamnolia vermicularis* (Sw.),—(specimens from Dickson and R. Brown).

L. rangiferinus=*Cladina rangiferina* (L.),—(a fertile specimen), and along with it a specimen marked *L. rangiferinus* (alpestris)=*Cl. sylvatica* var. *alpestris* (L.); sterile.

Var. 2=*Cladonia pungens*, Flk. and f. *foliosa*, Flk. (sterile specimens).

L. subulatus=*Cladonia furcata* (subulata L.),—(a fertile specimen).

L. Roccella=*Roccella tinctoria* (DC.),—(a small specimen very sparingly fertile from Dickson, who rightly adds "I fear not English").

L. tristis=*Parmelia tristis* (Webr.),—(specimens from Relhan and Griffith, also from Dickson Hort. Sic. 25 s. n. *Lichen radiatus*).

L. hispidus=*Cetraria aculeata* f. *hispida* (Lghft.),—(specimens from Relhan, Dickson and Griffith).

L. uncialis=*Cladonia uncialis* (L.),—(a sterile specimen).

Var. 2=f. *turgesceus* (Fr.),—(sterile, from Birmingham Heath).

L. paschalis=*Stereocaulon coralloides* (Fr.),—(specimens from Dcks. Hort. Sic. 24, sterile).

L. spinosus=*Cladonia furcata* var. *racemosa* f. *spinosa* (Lghft.), (sterile specimen from Dickson).

L. papillaria=*Pycnothelia papillaria* (Ehrh.),—(sterile specimen from Dickson, with very short podetia).

L. furcata=*Cladonia furcata* var. *racemosa* (Hffm.),—(fertile specimen from Dickson).

Var. 2=*Cl. racemosa* f. *recurva* (Hffm.),—(substerile specimens).

L. muscicola=*Leptogium muscicola* (Sw.),—(specimens from Dickson, fertile, and from Griffith, sterile).

G. Somewhat crustaceous, Thread-like.

L. ochroleucus=*Alectoria sarmentosa*, var. *cincinnata* (Fr.),—(specimen from R. Brown, s. n. *L. ochroleucus* who observes that "no accurate account has yet been given of this remarkable plant").

L. jubatus=*Alectoria jubata* (prolixa, Ach.),—(sterile specimen from Griffith). Mr Gough's specimen from the gallery of a copper mine=(*Ozonium aureum*, Fr.).

L. hirtus=*Usnea hirta* (L.),—(sterile specimens from Dickson) also a specimen from Dartmoor=*U. ceratina*, (Ach.), (sterile).

L. chalybeiformis=*Alectoria jubata* var. *chalybeiformis* (L.),—(specimen from Dickson) and=*Alectoria nigricans* (Ach.),—(specimen from Griffith).

L. exilis=*Ephebe pubescens* (L.),—(specimens from Dickson, sterile, and from Griffith, one of which is fertile).

L. lanatus=*Alectoria bicolor* (Ach.),—(specimen from Griffith) and=*Parmelia lanata*, var. *reticulata* (Wulf.),—(specimen from Dickson).

L. pubescens=*Parmelia lanata* var. *reticulata* (Wulf.),—(specimens from R. Brown and Griffith). A specimen from Dickson=*Ephebe pubescens* (L.).

L. articulatus=*Usnea articulata* (L.),—(specimen from Dickson).

Var. 2 *barbatus*=a state with the articulations more slender, —(specimen from Dickson, on the label of which it is called *L. barbatus*, Huds.).

L. vulpinus=*Physcia flavicans* (Sw.),—(specimens from Dickson s. n. *L. vulpinus* and from Griffith, one of which is the true *Chlorea vulpina* (L.), but not British).

L. plicatus=*Usnea dasypoga* (Ach.),—(specimens from Dickson and Relhan, sterile), while a specimen from Gough = *U. ceratina*, Ach.

L. floridus=*Usnea florida* (L.),—(specimens from Griffith and from Deks. Hort. Sic. 25).

H. Herbaceous.

L. farinaceus=*Ramalina farinacea* (L.), (a sterile specimen).

Var. 2=f. *phalerata*, (Ach.) (sterile.)

Var. 3=*Ramalina pollinaria* (Westr.), sterile.

L. fuciformis=*Roccella fuciformis* Ach.,—(sterile specimen from Dickson).

L. pinastri=*Platysma pinastri* (Scop.),—(a specimen from Dickson).

L. calicaris=*Ramalina calicaris*, (Hffm.),—(specimens from Dickson ; fertile).

Var. 2=*Ramalina cuspidata* (Ach.), and f. *minor*, Nyl., both sterile.

L. endocarpon=*Endocarpon hepaticum*, (Ach.),—(specimen from Dickson), and f. *trapeziforme* (Zoega)—(specimen from R. Brown).

L. crocatus=*Stictina crocata* (L.),—(specimens from Deks. Hort. Sic. 24*).

L. prunastri=*Evernia prunastri* (L.),—(fertile specimen from Dickson, who observes on the label "not of any English author, it will be in my 4th fasc.," also fertile specimen from Relhan s. n. *Lichen corniculatus*).

Var. 2. Of this there is no specimen.

L. glaucus=*Platysma glaucum* (L.),—(sterile specimens from Dickson).

L. fallax=*Platysma glaucum* f. *fallax* (Webr.),—(a sterile specimen from Dickson).

L. Islandicus = *Cetraria Islandica* (L.),—(specimens from Griffith, sterile, from R. Brown, fertile, and one from Dickson = *f. platyna*, Ach., fertile).

Var. 2 = **Cetraria crispa* (Ach.),—(a sterile specimen from Relhan).

L. pulmonarius = *Sticta pulmonaria* (L.),—(fertile specimens from Griffith and from the New Forest).

L. ciliaris = *Physcia ciliaris* (L.),—(specimens from Relhan, Egbaston Park, and from Dicks. Hort. Sic. 24, all fertile).

Var. 2 = *f. verrucosa* (Ach.),—(from Egbaston Park, "plentiful.")

L. furfuraceus = *Evernia furfuracea* (L.),—(specimens from Dickson, Relhan, and Robson, fertile, also on trees, Egbaston Park = *f. Scobicina*, Ach., sterile).

L. tenellus = *Physcia stellaris** *tenella* (Scop.),—(a small specimen from Relhan, fertile).

L. fraxineus = *Ramalina fraxinea* (L.),—(fertile specimens).

L. scopulorum = *Ramalina scopulorum* (Retz.),—(fertile specimens from Dickson).

L. Burgessii = *Leptogium Burgessii* (Lghft.),—(specimens from Dicks. Hort. Sic. 24).

L. glomuliferus = *Ricasolia amplissima* (Scop.),—(specimens from Dickson and Griffith).

L. lætevirens = *Ricasolia lætevirens* (Lghft.),—(fertile specimens from Griffith, s. n. *Lichen herbaceus*, Huds.).

L. caperatus = *Parmelia caperata* (L.),—(specimens from Dickson, fertile, and from Relhan, sterile).

L. scrobiculatus = *Stictina scrobiculata* (Scop.),—(sterile specimens from Griffith and Dickson, the latter of whom observes that it is *L. verrucosus*, Huds.).

L. plumbeus = *Coccocarpia plumbea* Pers.,—(specimens from Griffith and from Dicks. Hort. Sic. 24, s. n. *Lichen cærulescens*, and others from the latter, one of which = *Pannaria rubiginosa* (Thunb.), while one from Griffith = *P. rubiginosa*, var. *conoplea*, Ach.).

L. saturninus = *Leptogium saturninum* (Dicks.),—(sterile specimens from Dickson and R. Brown, also one from the latter = *Leptogium Hildenbrandii* (Garov.).

L. nivalis = *Platysma nivale* (L.),—(specimens from Dickson and R. Brown).

L. endivifolius = *Cladonia endiviæfolia* (Dicks.),—(specimens from Dicks. Hort. Sic. 24*).

L. ampullaceus = *Platysma glaucum* f. *ampullaceum* (L.). Of this there is no specimen, cfr. Bot. Arr. Ed. 3, iv., p. 61).

L. tenuissimus = *Leptogium* (Homodium) *tenuissimum* (Deks.), —(specimen from Dickson, well fruited).

L. membranaceus = *Amphiloma lanuginosum* (Ach.), —(sterile specimen from Dickson).

L. concolor = *Physcia lychnea* (Ach.), —(fertile specimens from Dickson, corticole, and from Relhan, saxicole).

I. Root Central.

L. Jacquini. Of this there is no specimen.

L. torrefactus = *Gyrophora torrefacta* (Lghft.), —specimens from Dickson and Relhan, the latter s. n. *L. polyrhizos*, Huds.).

L. deustus = *Gyrophora proboscidea* (Ach.), —(fertile specimens from Dickson and Griffith).

L. anthracinus. Of this there is no specimen.

L. polyrhizos = *Gyrophora polyrhiza* (L.), —(sterile specimens from Dickson and Relhan (s. n. *L. relleus*, Huds.), also a specimen from Relhan = f. *luxurians*, Ach.).

L. pustulatus = *Umbilicaria pustulata* (L.), —(sterile specimens from Dickson and Relhan).

L. proboscideus = *Gyrophora cylindrica* (Ach.), —(specimens from Dickson and Griffith), also specimens from R. Brown = f. *denticulata*, Ach.

Var. 2 = f. *fimbriata* (Ach.), —(specimen from Griffith).

L. polyphyllus = *Gyrophora polyphylla* (L.), —(specimens from Relhan and Griffith, sterile).

L. miniatus = *Endocarpon miniatum* (Ach.), —(specimens from Dickson, Griffith, and Mr. Threshar; also a specimen from Dickson = var. *complicata*, Ach.).

L. amphibius = *Endocarpon fluviatile*, (D. C.), —(specimen from Griffith) and also = *E. miniatum*, var. *euplocum* (Ach.), —(specimen from Griffith).

L. fluviatilis (*L. aquaticus* on label) = *Endocarpon fluviatile*, (D.C.), —(specimen from Griffith).

K. Foliage Leather-like.

L. fucoides = *Rocella phycopsis* (Ach.), —(a fragmentary and sterile specimen from Dickson).

L. saccatus = *Solorina saccata* (L.), —(specimens from Griffith, Dickson, and Relhan).

L. croceus = *Solorina crocea* (L.), —(sterile specimen from R. Brown).

L. perlatus = *Parmelia perlata* (L.), —(sterile specimen from Relhan), also a specimen from Dickson = *Parmelia perforata* (Wulf.).

L. caninus=*Peltigera canina* (L.),—(fertile specimens from Dickson).

L. polydactylos=*Peltigera polydactyla*, Hffm. and f. *microcarpa* (Ach.),—(specimens from Dickson).

Var. 2=*P. polydactyla* * *hymenina*, (Ach.),—(specimen from Griffith).

L. venosus=*Peltidea venosa* (L.),—(specimens from Dickson and Hort. Sic. 25).

L. aphthosus=*Peltidea aphthosa* (L.),—(sterile specimens from Dickson and fertile from Relhan).

L. rufus (*L. rufescens* on label)=*Peltigera rufescens*, (Hffm.),—(fertile specimen from Griffith).

L. fuliginosus=*Stictina fuliginosa* (Huds.),—(sterile specimens from Griffith, one of which marked "male plant"=*Stictina limbata*, Sw.)

L. resupinatus=*Nephromium lusitanicum* (Schær.),—(specimens from Dickson and Griffith).

Var. 2=the same, with the medulla of a deep yellow colour,—(specimen from Griffith).

L. scutatus=*Peltigera scutata* (Dcks.),—(fertile specimens from Dickson).

L. sylvaticus=*Stictina sylvatica* (Huds.),—(specimens from Relhan and Griffith).

Var. 2. Of this there is no specimen.

L. horizontalis=*Peltigera horizontalis* (L.),—(fertile specimens from Dickson).

L. Gelatinous.

L. tremella=*Leptogium lacerum* (Sw.),—(specimens from Relhan and Dickson).

Var. 2. Of this there is no specimen.

Var. 3=var. *pulvinatum* (Hffm.),—(specimen from Griffith).

Var. 4=*Scytonema*, Sp.? (sterile specimen from Griffith).

L. sepincola=*Platysma ulophyllum* (Ach.),—specimen from Dickson).

L. granulatus=*Collema furrum* (Ach.),—(specimen from Dickson), and also=*C. granuliferum*, (Nyl.),—(specimen from Griffith).

L. cochleatus=*Collema flaccidum*, (Ach.),—(sterile specimen from Griffith), and also *Leptogium tremelloides* (L.),—(sterile specimen from Dickson).

L. palmatus=*Leptogium palmatum* (Huds.),—(sterile specimen from Dickson). Along with this a specimen from Griffith marked ?=*Platysma commixtum*, Nyl., old and sterile.

L. nigrescens=*Collema nigrescens* (Huds.),—(fertile specimens from Griffith and from Deks. Hort. Sic. 22).

L. cristatus=*Collema tenax* var. *coronata*, (Kbr.),—(specimens from Dickson s. n. *L. crispus*, and from Griffith).

L. sinuatus=*Leptogium sinuatum* (Huds.),—(fertile specimens from Dickson and Griffith).

L. fascicularis=*Collema fasciculare* (L.),—(specimen from Dickson), and also=*Leptogium* (*Collemodium*) *microphyllum* (Ach.),—(specimen from Griffith).

L. crispus=*Collema cheileum*, (Ach.),—(fertile specimen from Mr. Woodward).

L. rupestris. Of this there is no specimen.

L. fluviatilis=*Leptogium fluviatile* (Huds.),—(specimens from Griffith, fertile ; from Dickson and R. Brown, sterile).

Sphæria gregaria=*Arthonia cinnabarina*, var. *Kermesina* (Schær.),—(specimens from Griffith).

SIROSIPHON SAXICOLA (*Næg.*).

Filaments minute, curved, variously branched, closely crowded into a thin dark crust or unevenly scattered pulvinuli ; vagina narrow, fuscous ; cellules in single series, growing denser and nucleate with age ; fruit not seen.

On damp rocks, rare ; Ennerdale Lake side, Cumberland, 1881.

This lichen grows upon damp rocks, or rocks down which water trickles rather than flows ; its colour when wet is dark olive, when dry black. It is sparsely scattered, more thickly clustered in some spots than others, and looks like a thin dark plush upon the stone. With a lens, the filaments can be distinguished entangled and depressed, and under the microscope they appear variously branched, somewhat mammillose and obtuse. The cellules are defined, roundish at the apices of the ramuli, but becoming oval, oblong or quadrate, as they are crowded down into the older parts of the filaments, where they are frequently double. The ramuli are merely lateral developments of the central cellules, and these run out into branches not by bursting, but by diverting the vagina.

Dr. Nylander has examined this plant and pronounced it the species named, and we know of no previous record in Great Britain of which it is a synonym. How far it may differ from *Scytonema minutum* Ag. (Mackay's Fl. Hibernica, p. 236) we cannot say, as we have not seen the latter.

W. JOHNSON.

Hartlepool.

NOTES ON HYPOCREACEÆ.

By M. C. COOKE.

It is not our intention to proceed in detail with observations on some of the remaining groups of Saccardo's "Sylloge," since such a course would involve a considerable amount of labour, and no small expenditure of space. It is very generally known what our views are with regard to such a carpological arrangement, and therefore these need not to be repeated at every step. We shall therefore content ourselves with giving the diagnoses of additional species; and probably, in some form or other, print our method of grouping the species, as classed in our own Herbarium, and that of the Royal Gardens at Kew.

One point must, however, be noticed, in passing, with regard to the genus *Nectria*. We have long considered that, inasmuch as cæspitose species are kept generically distinct from those in which the perithecia are scattered, in other sections of *Pyrenomycetes*, so in this genus they should be separated, retaining the old name of *Nectria* for the cæspitose species, and adopting one of Saccardo's subgeneric names, viz., that of *Dialonectria*, for the discrete species. Other divergencies from the method adopted in the work above named we must leave to justify themselves. Those who hold views similar to ourselves will appreciate our endeavour to bring the two systems into working order, so that, whilst maintaining our opinions, we may still turn the labours of Professor Saccardo to the best account that we can.

We have preferred to supplement *Hypocreaceæ* by a subdivision into three sub-families: (i.) HYPOCREOIDEÆ for the genera of compositæ forms; (ii.) NECTRIÆ for the simple or cæspitose groups of true *Nectria* allies; and (iii.) PSEUDO-NECTRIÆ for those aberrant genera, which we do not feel justified in placing in the second sub-family.

We enter upon this method with a desire to adopt all that we can, with a good conscience, accept of the scheme of the "Sylloge," and to reject such as we may not approve, without acrimonious and unnecessary discussion.

Claviceps Wilsoni, Cooke.

Mycelio sclerotioideo, cylindrico, subarcuato, atropurpureo, nigrescente. Stromatibus solitariis, vel binatis, vel ternatis, simplicibus, carnosus, albo-flavidis; clavula elongato-clavata, flavo-carnea, e peritheciis laxis subliferis prominentibus asperula (peri. $\cdot 4 \times \cdot 18$ mm.); stipitis flexuoso, abbreviato, cylindrico, primo albido. Asci angustissimis, linearibus; sporidiis filiformibus ($\cdot 14$ mm. long).

On ergot of *Glyceria fluitans*. (A. S. Wilson.)

Differs from all other species in the elongated clavate capitulum and in the lax manner in which the perithecia are produced.

Cordyceps typhulæformis, Berk. & Cooke in Herb. Berk. No. 8255.

Stromate clavato, gracili, carneo-rubro, in stipitem æqualem attenuato, carnosio-molli (circa semiuncialis). Peritheciis subprominulis, ascis cylindraceis. Sporidiis filiformibus.

On larvæ? Java.

5051. **Cordyceps sinensis**, Berk.

Ascis cylindraceis, apice capitatis. Sporidiis filiformibus, in fragmentis dissilientibus.

5053. **Cordyceps dipterigena**, B. & Br.

Ascis linearibus, subflexuosis. Sporidiis filiformibus, articulis brevibus, subquadratis.

Cordyceps albida, Berk. & Curt. in Herb. Berk. No. 8269.

Similar to conidia of *C. sphingum*, but smaller, tips somewhat clavate. Too imperfectly developed for description.

On crickets. Cuba.

Glaziella vesiculosa, Berk. & Warm. (Sacc. Syll. No. 5075.)

Subglobosa, ochreo-flavida, vesiculosa, magna (3-4 in. diam.), glaber, hinc illie rugulosa. Contexta carnosæ. Peritheciis periphericis, immersis, pallidis, immaturis.

Brazil. Glaziou No. 8526.

4988. **Hypocrea scutellæformis**, B. & C.

Hypocrea Ravenelii, B. in Raven. Fungi Car.

Are two names for the same species.

4901. **Hypocrea ochroleuca**, B. & Rav.

Sporidiorum articulis (·006 mm.) hyalinis.

4904. **Hypocrea armeniaca**, B. & C.

Sporidiorum articulis globosis hyalinis (·004 mm.).

4905. **Hypocrea polyporoidea**, B. & C.

Sporidiorum articulis globosis hyalinis (·004 mm.).

4906. **Hypocrea saccharina**, B. & C.

Sporidiorum articulis globosis hyalinis (·005 mm.).

4907. **Hypocrea insignis**, B. & C.

Sporidiorum articulis subglobosis, hyalinis (·0035 mm.).

4909. **Hypocrea sulphurea**, Schwein.

Sporidiorum articulis globosis hyalinis (·005 mm.).

4915. **Hypocrea Stereorum**, Schwein.

Sporidiorum articulis subglobosis hyalinis.

4916. **Hypocrea peltata**, Jungh.

Sporidiorum articulis globosis hyalinis.

Hypocrea umbrina, Cooke. *Hypocrea gelatinosa*, var. *umbrina*, Cesati.

Convexa, sublobata (1-2 c.m. lata) umbrina, leniter rugulosa, ostiolis punctiformibus obscurioribus ornata. Ascis cylindraceis. Sporidiis in cellulis 16 globosis dissilientibus, hyalinis ·004 mm.

On rotten wood. Ceylon. (Cesati.)

Hypocrea Cesatiana, Cooke. *Hypocrea multiformis*, Cesati.

Applanata, rubro-fusca, subelliptica, vel irregularis, margine flavida. Ostiolis vix distinctis. Ascis cylindraceis. Sporidiis in cellulis 16 globosis hyalinis dissilientibus (·005 mm. diam.).

On wood. Sarawak. (Cesati No. 7.)

Hypocrea subrufa, Berk. & Cooke in Herb. Berk.

Gregaria vel sparsa, superficialis, hemisphærico-depressa, subdiscoidea, rufa (1-2 mm. diam.) ostiolis minimis obscurioribus. Ascis cylindræis. Sporidiorum articulis sub-æqualibus, globosis, hyalinis (·003 mm.).

On branches. Neilgherries, India.—(E.C.B.)

Hypocrea Karsteniana, Niessl. in Rehm. *Acomycten* No. 678. H. citrina, f. fungicola, Karst. *Myc. Fenn.* II., 204.

Sporidiorum articulis ovalibus (·003-·0035 mm.).

Hypocrea rugulosa, Berk. & Cooke in Herb. Berk.

Gregaria, superficialis, pulvinata vel hemispherica, rotundata, sicco rugulosa, carnosula, fusco-nigrescens (1-2 mm.) Stromatibus laxè adhærentibus, nudis, intus fuscis. Ostiolis vix prominulis. Ascis cylindræis (circa ·08 mm. long). Sporidiorum articulis æqualibus, quadrato-globosis, fuliginæis (·004-·0042 mm.).

On rotten wood. Neilgherries, India.—(E.C.B.)

Var. **major**.

Stromatibus minus rugulosis (3-4 mm.). Articulis sporidiorum majoribus (·005 mm. diam.)

On bark of trees. Neilgherries, India.—(E.C.B.)

Hypocrea undulata, Berk. & Cooke in Herb. Berk.

Effusa, pallido-ochracea, subtenuis, undulata, margine pallidiore tomentoso; ostiolis papillatis, numerosis, fusco-atris. Ascis cylindræis; sporidiis ellipticis, diu continuis, demum uniseptatis, utrinque rotundatis, hyalinis (·012 × ·005 mm.).

On rotten wood. Neilgherries, India.—(E.C.B.)

Hypocrea Nilgherrensis, Berk. & Cooke in Herb. Berk.

Tenuis, effusa (1 c.m. lata) convexo-applanata, ochraceo-flavida, centro fusca, margine pallidiore sterili; ostiolis papillatis, fuscis. Ascis breviter cylindræis (·05 mm. longis) octosporis; sporidiis ovalibus vel subglobosis, continuis, hyalinis (·005 × ·006 mm.).

On bark. Neilgherries, India.—(E.C.B. No. 59).

Hypocrea colliculosa, Fries. in Herb. Berk.

Pallida, effusa, planiuscula, tomentosa ($\frac{1}{2}$ -1 inch lata) peritheciis convexis, magnis (1 mm. diam.) ostiolis papillatis, atris. Ascis cylindræis. Sporidiorum articulis subglobosis (·005 mm.) hyalinis.

On old *Polyporus*. Sweden.—(E. Fries).

Hypocrea consimilis, Ellis N. Amer. *Fungi* No. 158.

Orbicularis, rufa, convexa, subcorrugata, sparsa vel aggregata, carnosula (1-2 lin.) Ascis cylindræis, octosporis. Sporidiis ellipticis, continuis, hyalinis (·01 × ·004 mm.).

On decorticated *Azalea viscosa*.

Hypocrea Carteri, Berk. & Cooke in Herb. Berk. No. 8318.

Effusa, indeterminata ($\frac{1}{4}$ -1 in. diam.) ochracea, undulata, margine tenui. Ostiolis punctiformibus, fuscis. Peritheciis subglobosis, immersis. Ascis subcylindricis. Sporidiis ellipticis, uniseptatis, hyalinis (·015 × ·005 mm.).

On bark. Bombay.—(H. J. Carter).

Hypocrea Fendleri, *Berk. & Curt. in Herb. Berk.* 8325.

Sub-effusa, plana, demum atro-fusca, margine obtuso, contextu albo. Peritheciis immersis, subglobosis. Ascis cylindraceis, octosporis. Sporidiis ellipticis, hyalinis ($\cdot 005\text{--}\cdot 006$ mm. long).

On bark. Venezuela.

In all the three species, Nos. 4895, 4896, 4897, we believe that the joints of sporidia are sixteen, and *not* eight.

Hypomyces apiosporus, *Cooke.*

Effusa, pallida, tenuis. Peritheciis semi-immersis, leniter papillatis (sicco melleis) ostiolis obscuriore. Ascis cylindraceis, octosporis. Sporidiis lanceolatis, supra apiculatis, infra rotundatis, totius asperulatis, continuis (apiculâ exceptâ) flavidis ($\cdot 018 \times \cdot 0065$ mm.).

On *Clavaria pistillaris* (?). New York, U.S.—(*W.R.G.*)

Hypomyces spadiceus, *Fries. in Herb. Berk.*

Tenuis, effusa, spadicea. Peritheciis parvulis ($\cdot 15\text{--}\cdot 2$ mm. diam.) congestis, semi-immersis, ostiolis papillato, concolore. Ascis cylindraceis. Sporidiis arcte lanceolatis, uniseptatis, hyalinis ($\cdot 016\text{--}\cdot 02 \times \cdot 003\text{--}\cdot 0035$ mm.).

On *Agarics* (?). Sweden.—(*E. Fries.*)

Sporidia acute but not apiculate. The sporidia apparently not well matured.

Hypomyces ater, *Fries. Summa Veg. Scan.* 564.

Effusa, tenuis, atra; peritheciis glabris, semi-immersis, ostiolo conico, concolore. Ascis cylindraceis. Sporidiis lanceolatis, utrinque acutis, uno polo mucronatis, continuis, hyalinis ($\cdot 03\text{--}\cdot 035 \times \cdot 005\text{--}\cdot 006$ mm.).

On *Agarics*. Sweden.—(*E. Fries.*)

Sometimes the mucronate extremity appears to have a pseudo-septum.

Hypomyces tomentosus, *Fries.* (*Sacc.* 4643.)

Ascis cylindraceis. Sporidiis lanceolatis, utrinque mucronulatis, uniseptatis, hyalinis ($\cdot 042\text{--}\cdot 05 \times \cdot 006\text{--}\cdot 007$ mm.).

Hypomyces tegillum, *Berk. & Curt.* (*Sacc.* 4645.)

Ascis cylindraceis. Sporidiis arcte lanceolatis, uniseptatis, hyalinis ($\cdot 014\text{--}\cdot 016 \times \cdot 003$ mm.).

Hypomyces flavescens (*Schwein.*).

Peritheciis gregariis, distinctis, globoso-oratis, papillatis, albidis, villo secedente tectis, subiculo lacteo latissimo pubescente insidentibus. Ascis cylindraceis. Sporidiis arcte ellipticis, hyalinis, immaturis.

On the hymenium of resupinate Polypori. Bethlehem, U.S., ex. herb. *Schweinitz.*

Hypomyces pannosus (*Schwein.*).

Late effusus, albidus, pannosus, tenuis, margine fimbriato-byssino. Peritheciis semi-immersis, pallidis. Ostiolis punctiformibus, fuscis. Ascis cylindraceis. Sporidiis immaturis.

On rotten wood. Ex herb. *Schweinitz*.

Quite a different thing from the species described by Fries under the name of *Sphæria pannosa*.

Nectria alutacea, Berk. & Cooke in Herb. Berk.

Cæspitosa, erumpens, alutacea, vel incarnata. Peritheciis in stromate ellipsoideo vel elongato congestis, subglobosis, papillatis, lævibus, glabris (·25 mm. diam.), translucetibus. Ascis clavatis, octosporis. Sporidiis biserialis, ellipticis, uniseptatis, hyalinis (·01-·012 × ·003 mm.).

On bark. Neilgherries, India (*E. S. Berkeley*).

Nectria collabens, Berk. & Cooke in Herb. Berk.

Cæspitosa, erumpens, mellina. Peritheciis in stromate tuberculoideis congestis, subglobosis dein collabescentibus, diffimibuscumque, glabris, tenuissimis (·2 mm. diam.). Ascis cylindræcis, octosporis. Sporidiis late ellipticis, utrinque attenuatis, loculis sub-conicis, uniseptatis, hyalinis, magnitudine valde variabilis (·012-·014 varius ·018 × ·006 mm.).

On bark. Bombay (*H. J. Carter*).

Nectria hypocreoides, Berk. & Cooke in Herb. Berk.

Cæspitosa, erumpens, pallida. Peritheciis subglobosis, mox confluentibus (·25 mm. diam.) in stromate tuberculoideis densissime congestis, furfure flavo-pallescens conspersis; ostiolis nudis obscurioribus. Ascis cylindræcis, octosporis. Sporidiis ellipticis, hyalinis, endochromate bipartito, nec vere uniseptatis (·012 × ·004 mm.).

On bark. Bombay (*H. J. Carter*).

Nectria fenestrata, Berk. & Curt. in Herb.

Cæspitosa, cinnabarina, erumpens. Peritheciis globosis, lævibus, glabris, vix papillatis, in stromate tuberculoideo aggregatis. Ascis clavatis, octosporis. Sporidiis biserialibus, ellipticis, 5 septatis, muriformibusque, hyalinis (·03 × ·01 mm.).

On bark. Canada, Ceylon.

Nectria balsamea, Cke. & Peck (*Sacc. Syll.* 4804).

Erumpens, cæspitosa, suborbicularis. Peritheciis parvulis, lævibus, coccineis, papillatis demum collapsis, stromate pallido congestis. Ascis cylindræceo-clavatis, octosporis. Sporidiis fusiformibus, quinqueseptatis, hyalinis (·03 × ·077 mm.).

On bark of *Abies balsamea*. U.S.A.

Nectria decolorans, Fries. *Scler. Succ.*, No. 184.

Ascis cylindrico-clavatis. Sporidiis octonis ellipticis, utrinque rotundatis, uniseptatis, leniter constrictis, hyalinis (·023-·025 × ·0075 mm.).

The above are the results of the examination of three authentic specimens of this species as published in *Scler. Succ.* No. 184.

Nectria Passeriniana (*Nectria viticola*, Pass in *Pirotti. Fung. Par.* 45).

Sub-cæspitosa, erumpens. Peritheciis sub-globosis, carneis, in stromate pulvinato connatis. Ascis cylindræcis, octosporis. Sporidiis ellipticis, uniseptatis, hyalinis (·02 × ·009 mm.).

On vine twigs. (*Ex herb. Passerini*).

Not the species of Berk. and Curt., which is—

Dialonectria viticola, B. & Curt. (*viz. Sacc. Syll.*, No. 4729.)

Sporidiis ellipticis, uniseptatis, hyalinis, (0.1×0.004 mm.).

On *Vitis*. N. America. (*Ex herb. Berkeley*.)

Dialonectria Eucalypti, Cooke & Hark.

Sparsa, superficialis, ochracea. Peritheciis globosis, demum subdepressis (2 mm.), primum pilis papillosis sparsis hyalinis obsitis, mox denudatis. Ascis clavatis, octosporis. Sporidiis lanceolatis, uniseptatis, nec constrictis, hyalinis ($0.16-0.18 \times 0.004$ mm.).

On bark of *Eucalyptus* branches. California. (*Harkness*, 2,216, 2359.)

Dialonectria depallens, Cooke & Hark.

Sparsa, gregariave, superficialis, testaceo-rubra, depallens. Peritheciis subglobosis, glabris, nudis, opacis ($\frac{1}{4}-\frac{1}{2}$ mm.). Ascis clavatis, octosporis. Sporidiis lanceolatis, utrinque subacutis, uniseptatis, nec constrictis, hyalinis ($0.22-0.24 \times 0.004-0.0045$ mm.).

On stems of *Lupinus*. California (*Harkness*, 2,432).

Dialonectria episphærica, Fries., var. **verruculosa**, Cke.

Peritheciis obtuse, verruculosis, vix collabescentibus. Ascis sporidiisque ut in typis.

On perithecia of *Sphæria confinis*, Lev. Java.

The specimen of *Sphæria confinis*, Lev. in Herb. Berk., has this *Nectria* parasitic on the pustules; hence the *Sphæria* was called *Nectria confinis*, and placed in that genus. Examination has proved, however, that the *Nectria* is parasitic upon Leveille's *Sphæria*, which is quite distinct, and allied to *Cucurbitaria*, although no perfect sporidia could be found.

Dialonectria lætifulva, Berk. & Cooke in Herb. Berk.

Gregaria, sparsave, lætifulva. Peritheciis superficialibus, globosis, papillatis, glabris, lævibus ($2-2.5$ mm. diam.). Ascis clavatis, octosporis. Sporidiis biseriatis, breviter lanceolatis, uniseptatis, hyalinis (0.14×0.004 mm.).

On bark. Neilgherries, India (*E. S. Berkeley*).

Dialonectria xanthostigma, Berk. & Cooke in Herb. Berk.

Sparsa, superficialis, flavida. Peritheciis lævibus, glabris, subglobosis (2 mm. diam.), leniter papillatis. Ascis clavatis, octosporis. Sporidiis biseriatis, arcu ellipticis, utrinque rotundatis, uniseptatis, hyalinis (0.1×0.003 mm.).

On herbaceous stems. Neilgherries, India (*E. S. Berkeley*, 1863).

Dialonectria Dorcas (Peziza dorcas, B. & Br. *Ceylon Fungi* 944).

Superficialis, sparsa, globosa, demum collapsa et cupulæformis. Peritheciis extus cervino-tomentosis. Ostiolo fusco. Sporidiis subellipticis, medio constrictis, biseriatis, uniseptatis, hyalinis (0.12×0.0045 mm.).

On some monocotyledonous plant. Ceylon.

Dialonectria vulpina (Peziza vulpina, C.), Cooke.

Sparsa, aurantio-fusca. Peritheciis globosis, demum depressis et cupulæformibus, lævibus, glabris, vix papillatis (.3-.5 mm.) Ascis clavatis. Sporidiis arcte ellipticis, hyalinis, continuis (.008 × .0025 mm.).

On chips. New Jersey (J. B. Ellis).

Dialonectria diminuta (B. & C.), Nectria diploa, var. diminuta, B. & C. *N. Amer. Fungi.*

Sporidiis demum triseptatis, hyalinis (.025-.03 × .0085 mm.).

Parasitic on *Sphæria*.

HYSTRICULA, Cke.

Cæspitosa, erumpens. Peritheciis confluentibus, vel discretis, tomentosis, mollibus, carneo-membranaceis. Ostiolis teretibus, longissimis. Ascis brevibus. Sporidiis globosis, hyalinis.

Hystricula Montagnei (Hypoxylon erinaceum, Mont). *Sacc. Syll. No. 1497.*

Sporidiis globosis, hyalinis (.004 mm.).

NEW CALIFORNIAN FUNGI.

(Continued from Vol. IX., p. 81.)

Dialonectria Eucalypti, Cooke & Hark. *Grevillea* XII. p. 82.

On branches of *Eucalyptus* (No. 2216).

Dialonectria depallens, Cooke & Hark. *Grevillea* XII. p. 82.

On stems of *Lupinus* (No. 2432).

Stictis monilifera, Phillips & Harkness.

Gregaria, minuta, immersa, margine integro, vel sublacinato, prominulo, disco albido. Sporidiis filiformibus moniliformibusque, (.1 × .002 mm.) paraphysibus numerosissimis.

On fruit of *Pittosporum*. California (Harkness, 2426).

Phacidium albidum, Phil. & Hark.

Hypophyllum, gregarium, tectum, convexum, demum in lacinias dehiscens; disco albido. Ascis cylindraceo-clavatis. Sporidiis linearibus, utrinque acutis, multinucleatis (.06-.075 × .002 mm.). Paraphysibus numerosissimis, filiformibus.

On the under-side of leaves of *Vaccinium*. California (Harkness, 2561).

Hysterium (Hysterographium) ceanothi, Phil. & Hark.

Sparsum, sessile vel subimmersum, ovale, dein lanceolatum, læve, glabrum, nitidum, atrum. Labiis prominulis, arcte conniventibus. Ascis late clavatis, tetrasporis. Sporidiis muriformibus, oblongo-lanceolatis, utrinque obtusis, fuscis (.04-.015 × .014 mm.) paraphysibus adherentibus.

On stems of *Ceanothus*. California (Harkness, No. 2540 bis.).

Sometimes the sporidia are surrounded by a gelatinous envelope.

Hysterium prominens, *Phil. & Hark.*

Sparsum, erumpens dein superficiale, atrum. Peritheciis ellipticis (1 mm. long), longitudinaliter striatis, labiis demum late apertis, hiantibus; disco atro. Ascis clavatis, octosporis. Sporidiis lanceolatis, medio constrictis, utrinque acuminatis, multiseptatis (7-11), fuscis ($\cdot 04\text{--}\cdot 05 \times \cdot 01$ mm.).

On branches of *Salix* (No. 2647).

Lophodermium Dracænæ, *Phil. & Hark.*

Sparsum, ellipticum vel ovatum ($\cdot 3\text{--}\cdot 8$ mm. long), superficiale, deciduum, glabrum, atrum, labiis adherentibus, demum apertis, hiantibusque. Ascis cylindraceis, octosporis. Sporidiis filiformibus, hyalinis ($\cdot 07\text{--}\cdot 085 \times \cdot 001\text{--}\cdot 002$ mm.), paraphysibus filiformibus, ad apicem dichotomis.

On *Dracæna*. California (*Harkness*, 2514).

FUNGI FROM PERAK.

Lenzites repanda, *Fr.* (Wray, 73.)

Polyporus (Mesopus) rugosus, *Nees.* (Wray, 85.)

Polyporus (Pleuropus) affinis, *Nees.* (Nos. 79, 80.)

Polyporus (Pleuropus) Guilfoylei, *Müll.* (74.)

Polyporus (Pleuropus) grammocephalus, *Berk.* (90.)

Polyporus (Anodermei) cinnabarinus, *Fr.* (78.)

Polyporus (Placodermei) australis, *Fr.* (72.)

Polyporus (Inodermei) Auberianus, *Mont.* (81.)

Polyporus (Inodermei) albocervinus, *Berk.* (77.)

Polyporus (Inodermei) elongatus, *Berk.* (59, 84.)

Polyporus (Inodermei) Curreyi, *Berk.* (86.)

Dædalea tenuis, *Berk.* (76.)

Hydnum sclerodontium, *Berk.* (88.)

Lachnocladium furcellatum, *Lév.* (89.)

Stereum lobatum, *Kunze.* (75.)

Meliola amphitricha, *Fricks.*

OIDIUM TUCKERI.—In the "American Monthly Microscopical Journal" for Jan., 1884, Mr. Thos. Taylor claims to have found the perfect fruit of *Oidium Tuckeri* in *Uncinula spiralis*, B. & C. Although both the Rev. M. J. Berkeley and ourselves have urged that there is not the slightest evidence to prove their identity. In the paper above alluded to a communication of M. J. B. is quoted, which states distinctly, "We cannot suppose that it (*Uncinula spiralis*) arises from the historical *Oidium Tuckeri*." The same claim was raised by the same person in 1875, and replied to in the same terms by Mr. C. B. Plowright, in "Monthly Microscopical Journal," Vol. xiii., 1875, p. 209.

SOME EXOTIC FUNGI.

BY M. C. COOKE.

Polyporus (Mesopus) pocula (Sphæria pocula. Schwein. Proc. Acad. Sci. Phil).

Erumpens, herbinato-poculiformis, dependens minimus, pruinosis, albidus, substantia subsupirosa pallida (1 lin. lat.) Hymenio discoideo, concavo. Poris minutissimis brevibus Sporis globosis.—Cooke in Journ. Linn. Soc. ined.

On branches. U.S. America.

Cyphella discoidea, Cooke.

Gregaria, epiphylla. Cupulis discoideis, 1-2 mm. diam., tenuiter membranaceis, applanatis, glabris; disco carneo, margine albedo; basidiis brevibus, sporis glotosis, lævibus (·004 mm.).

On Hawkweed. New Zealand (Colenso, No. 30).

Stereum (Apus) lugubris, Cooke.

Coriaceum, rigidum, pileo effuso reflexoque, tomentoso, zonato, cinereo-pallescente, zonis obscurioribus, margine subacuto, pallido, hymenio subpapilloso, glabro, nudo, atro.

On logs. New Zealand (W. Colenso, 23).

A very distinct species by its black obtusely papillate hymenium. Pilei about an inch deep, often densely umbricated and extending laterally several inches.

Sphæria (Anthostomella) phormicola, Cke.

Sparsa, tecta. Peritheciis globosis atris, sub cuticulâ dealbatâ nidulantibus, ostiola impresso. Ascis cylindraceutis. Sporidiis ovalibus, continuis, atrofusis (·099-·01 × ·007 mm.).

On flower stalks of *Phormium*, New Zealand (Kirk, 24).

Sphærella (Sphærulina) Todeæ, Cke.

Sparsa, amphigena. Peritheciis minimis, subglobosis, atris, semi-emargentibus vix papillatis. Ascis clavatis. Sporidiis sublanceolatis, triseptatis, hyalinis (·012 × ·0025 mm.).

On *Todea hymenophyllodes*. Karori, North Island, New Zealand (Kirk, No. 1).

Asterina Licania, Cooke.

Epiphylla. Maculis suborbicularibus tennibus (1 cm.), atrofugineis. Peritheciis applanatis, orbicularibus; margine hyphis fuscis intertextis ornato. Ascis amplis saccatis. Sporidiis ellipticis, obtusis, medio constrictis, uniseptatis, atro-fuscis (·04-·045 × ·022-·026 mm.).

In foliis *Licania*. S. Carlos (Spruce, 633).

Meliola densa, Cooke.

Hyporarius epiphylla, aterrima, velutina. Maculis orbicularibus (1 cm.), dein confluentibus. Peritheciis globosis, atris, leniter verruculosis (·18 mm. diam.), inter fibras erectas, apice curvulas, confertissimas, quasi absconditis. Ascis late clavatis bisporis. Sporidiis ellipticis 4 septatis, constrictis, fuscis (·045 × ·018 mm.).

On leaves of *Eucalyptus*. Herbert River, Queensland, also on leaves of *Nex* (?) Khasia, India.

FUNGUS FORAY IN IRELAND.

The first Fungus Foray ever held in Ireland took place on 18th September, 1883, under the auspices of the Belfast Naturalists' Field Club.

An excursion was organised to Shane's Castle Demesne as being the oldest and most extensive wood in Ulster. It lies in the Connty Antrim, fourteen miles north of Belfast.

Nothing could have been more propitious than the weather, nor more abundant than the fungi, in picking specimens of which a large party of members and friends spent a long and pleasant day under the guidance of the Rev H. W. Lett.

A prize, a volume of Cooke's Fungi, having been offered for the best collection, eleven competitors displayed the contents of their bags, the numbers being respectively 8, 10, 14, 15, 20, 21, 31, 33, 34, 40, 56, representing in all about 80 species, distributed as follows :—

Agaricini	...	...	...	61
Polyporei...	...	...	...	8
Clavariæ ...	...	...	...	2
Trichogastres	...	...	...	2
Auricularini	...	...	...	3
Elvellacci	...	...	...	4

Here, as elsewhere in the North of Ireland, it was noticed that this year *Agaricus campestris* was one of the rarities. The most abundant were *Agaricus nebularis* and *Lactarius torminosus*, which were everywhere in thousands. Only one *Lycoperdon giganteum* and one *Agaricus muscarius* were met with. Several examples of *Helotium æruginosum* were collected in perfect condition. The best find of the Foray was a colony of magnificent *Sparassis*, wonderfully like cauliflowers, growing on the stump of an oak.

H. W. LETT, M.A.

ÆCIDIIUM BELLIDIS, D.C. This fungus has hitherto been regarded as one of the spore forms of *Puccinia compositarum*, Mart. During the past two years I have become convinced that this cannot be its true life history ; for upon the "daisy" no other spore forms occur. A series of experimental cultures made by me during the present winter have demonstrated the fact that this *Æcidium* is heterœcismal in its habit, and is connected with *Puccinia obscura*, Schröt. on *Luzula*. This *Puccinia* differs from *P. luzulæ*, Lib., in having subglobose rough uredo-spores, whereas the uredo-spores of *P. luzulæ* are elliptical and smooth. It has not previously been recorded as British.

CHARLES B. PLOWRIGHT.

King's Lynn.

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY
AND ITS LITERATURE.

NEW BRITISH LICHENS.

Communicated by THE REV. J. M. CROMBIE, F.L.S.

The following *new species* of Lichens discovered in this country have since my last communication in Grevillea, Vol. x, pp. 22-24, been described by Nylander in the "Flora."

1. ***Ephebeia Martindalei***, *Cromb.*, *Nyl. in Flora*, 1883, p. 104.

Subsimilar to *E. hispidula* (Ach.), but differing in the thallus, being scarcely spinulose, and in the receptacle of the apothecia above being smaragdine (or sub-bluish in thin section). Spores oblongo-ellipsoid, simple, 0.009-0.014 mm. long, 0.004-0.06 mm. thick.

On moist rocks. Mardale, Westmoreland (Martindale). Probably a subspecies of *E. hispidula*.

2. ***Lecanora (Placodium) miniatula***, *Nyl. in Flora*, 1883, p. 98.

Subsimilar to *L. lobulata* (Smmrf.), with the thallus subminiata, planer, and the spores smaller, 0.007-1.010 mm. long, 0.004-0.005 mm. thick.

On quartzose rocks. Morrone, Braemar (Crombie). Probably only a variety or subspecies of *L. tegularis* (Ehrh.).

3. ***Lecanora circinatula***, *Nyl. in Flora*, 1883, p. 100.

Thallus dark-grey or brownish-grey, adpressed, diffract, radiosodivided at the circumference, the radii plane; apothecia dark-brown, innate, plane, the thalline margin thin, entire; spores 8 μ , simple, ellipsoid, about 0.007 mm. long, 0.005 mm. thick, paraphyses thickish, articulated; hymenial gelatine at first bluish, and then tawny wine-red with iodine.

On siliceous stones, in maritime districts. Near Beachy Head, Sussex (Crombie). Allied to *L. circinata*, but smaller, and with smaller spores.

4. ***Lecanora decincta***, *Nyl. in Flora*, 1882, p. 452.

Thallus umbrine, smooth, thin, rimulose, greyish at the circumference; apothecia black, opaque, plane, the thalline margin not prominent, internally subincolous or brownish; spores 8 μ , ellipsoid, simple, 0.010-14 mm. long, 0.006-8 mm. thick, para-

physes discrete, nearly moderate; hymenial gelatine pale-bluish, and then tawny-yellow (especially the thecæ), with iodine.

On schistose rocks. Red Scues, Westmoreland (Martindale). Allied to *L. intercineta*, Nyl.

5. ***Lecidea cæsio-lepra***, Nyl. in *Flora*, 1881, p. 532.

Thallus cæsious, leprose, soft, thin, effuse, subrimose (K + yellowish); apothecia brown, slightly cæsio-pruinose, with evanescent thalline margin; spores 8 næ, colourless, ellipsoid, 1-septate, 0.009-0.011 mm. long, 0.004-5 mm. thick, paraphyses nearly moderate, inspersed at the apices; hymenial gelatine pale-bluish, the thecæ tawny-yellow, with iodine.

On sandstone rocks and quartzose soil. Island of Brechou, near Sark (Larbalestier). Belongs to the section of *L. cyrtella*.

6. ***Lecidea aggregatula***, Nyl. in *Flora*, 1883, p. 101.

Thallus whitish or greyish-white, minutely granulated, granulato-aggregated, diffract (K —); apothecia blackish or brownish-black, subrugulose, opaque, adnate, plane, immarginate or submarginate, internally pale; spores 8 næ, oblong, 0.011-15 mm. long, 0.005-6 mm. thick, epithecium brown, paraphyses slender, hypothecium colourless; hymenial gelatine bluish, and then tawny wine-red, with iodine.

On porphyritic rocks. Charnwood Forest, Leicestershire (Larbalestier). It belongs to the section of *Lecidea leucophæa*.

7. ***Lecidea tenebrica***, Nyl. in *Flora*, 1882, p. 454.

Thallus dark-greyish, unequal, areolato-rimose, thinnish, subdeterminate; apothecia black, convex, immarginate, internally whitish; spores 8 næ, ellipsoid, simple, 0.010-11 mm. long, 0.005-6 mm. thick, paraphyses not well discrete, epithecium and lower stratum of hypothecium brown; hymenial gelatine bluish, and then tawny-yellow, with iodine.

On schistose rocks. Red Scues, Westmoreland (Martindale). Although having the appearance of *L. tenebrosa*, it belongs rather to the section of *L. rivulosa*.

8. ***Lecidea contenebricans***, Nyl. in *Flora*, 1883, p. 533.

Thallus dark-greyish or greyish-brown, nearly moderate, smoothish, rimoso-diffract, internally white (and with I and K + yellow becoming rusty-red); apothecia black, somewhat plane, margined, internally whitish, the lower stratum dark-brown; spores 8 næ, ellipsoid, 0.010-11 mm. long, 0.005-6 mm. thick, epithecium dark-bluish, hypothecium reddish-brown; hymenial gelatine bluish, and then tawny-violet (the thecæ especially), with iodine.

On schistose rocks. Red Scues, Westmoreland (Martindale). Though having the appearance of *L. tenebrica*, this is a very distinct species, differing in being larger, with the apothecia margined, and in various other characters.

9. ***Lecidea coriaccella***, Nyl. in *Flora*, 1882, p. 454.

Thallus dark-greyish, subsmooth, coriaceo-insculpt, thinnish but somewhat variable; apothecia blackish, opaque, innate, immarginate, internally pale; spores 8 næ, ellipsoid, simple, 0.010-12

mm. long, 0.006 mm. thick, epithecium brown, paraphyses moderate, hypothecium colourless; hymenial gelatine yellowish (the thecae tawny wine-coloured) with iodine.

On porphyritic rocks. Red Scues, Westmoreland (Martindale). Belongs also to the section of *L. rivulosa*.

10. ***Lecidea periplaca***, *Nyl. in Flora*, 1882, p. 454.

Thallus greyish-black, thin, or very thin, subsmooth, thinly areolato-rimulose, subbyssoid and applanato-placodioid at the circumference; apothecia black, margined, at length convex, internally pale; spores 8 μ , ellipsoid, 0.009-0.010 mm. long, 0.006 mm. thick, epithecium and perithecium brown, paraphyses submoderate, thalamium slightly yellowish-brown, hypothecium colourless; hymenial gelatine bluish, and then yellowish (the thecae wine-red), with iodine.

On stones of walls. Staveley, Westmoreland (Martindale). Belongs to the section of *L. tenebrosa*.

11. ***Verrucaria interseptula***, *Nyl. in Flora*, 1881, p. 453.

Thallus olivaceous, opaque, thin; apothecia subconically convexo-prominent, the pyrenium dimidiately black, epithecium not impressed; spores 8 μ , colourless, fusiform, 5-septate, with one or two longitudinal or oblique septules, 0.020-24 mm. long, 0.006-7 mm. thick.

On moist siliceous rocks. Wastdale, Cumberland (Rev. W. Johnson). Belongs to the section of *V. chlorotica*, the thallus containing chrysogonidia.

12. ***Verrucaria canella***, *Nyl. in Flora*, 1883, p. 102.

Subsimilar to *Verrucaria amphibola* or *glauca*, but at once distinguished by the spores being subfusiform, 0.025-32 mm. long, 0.007-0.011 mm. thick.

On calcareous rocks. Bangor, N. Wales (J. Griffith).

13. ***Verrucaria globosa***, *Tayl. in Mss., Nyl. in Flora*, 1883, p. 534.

Thallus greyish or greyish-greenish, thin, unequal, continuous; apothecia yellowish or yellow flesh-coloured, pertusarioid, subgloboso-mastoid, often externally covered by the thallus; spores 8 μ , fusiform, 7-septate, 0.050-70 μ long, 0.010-14 μ thick; the spores only in the protoplasm tinged tawny-yellow, with iodine.

On trachytic rocks. Blackwater, Kerry (Taylor). Belongs to the section of *V. mastoidea*.

ADDITIONS TO THE BRITISH *CLADONIEI*.

The following varieties and forms have to be added to those recorded in my enumeration (*vid.* "Grevillea," 1883, pp. 111-115):—

1. ***Cladonia degenerans***, var. ***pleiolepilea***, *Nyl.*

Rare amongst the N. Grampians. Morrone, Braemar.

2. ***Cladonia furcata racemosa***, f. ***palamæa***, *Ach.*

Rare in S. England. Shiere, Surrey.

3. **Cladonia coccifera**, var. **incrassata**, *Flk.* (**Cl. macilenta**, f. **deminuta**, *Cromb.*).

Rare in the W. Highlands and among the Central Grampians.

4. **Cladonia macilenta**, var. **scabrosa**, *Mudd*; f. **incrassata**, *Cromb.*
 "Podetia larger, turgid, densely and coarsely granulato-squamulose."

Probably not unfrequent amongst the Grampians.

5. **Cladonia bacillaris**, var. **subcoronata**, *Nyl.*—*Exs.*, *Mudd Clad.*, n. 72 in pt.

Not common in N. England, the S. Grampians, and N. W. Ireland.

6. **Cladonia sylvatica**, f. **tenuis**, *Lamy.*—*Exs.*, *Mudd Clad.*, n. 58.

Probably not uncommon.

var. **grandis**, *Flk.*—*Exs.*, *Mudd Clad.*, n. 60.

Local and rare in N. England, S. Scotland, and amongst the Grampians.

J. M. C.

CALIFORNIAN FUNGI.

By M. C. COOKE AND W. H. HARKNESS.

(Continued from p. 84.)

Coniothyrium rosarum, *Cke. & Hark.*

Gregaria, tecta, demum corticem stellato-fissurans. Sporibus profusis subglobosis, ovatisve, continuis, pallide fuscis (0.004×0.003 mm.).

On stems of *Rosa*. California (No. 2176).

Coniothyrium punctum, *Cke. & Hark.*

Sparsum, subliberum, maculas nigras insidens. Peritheciis minimis, depressis, atris (0.15 mm. diam.). Sporibus subglobosis pallide fuscis (0.005 mm.).

On decorticated *Acacia*. California (2067).

Coniothyrium decipiens, *Cke. & Hark.*

Erumpens, prominulum, subgregarium. Peritheciis globosis, atris, opacis, subrugosis, demum superficialibus, sporibus ovalibus, subglobosisve continuis, pallide fuscis (0.004×0.003 mm.).

On branches of *Acacia*. California (No. 2267).

Phoma rhamnicola, *Cke. & Hark.*

Gregaria, minuta, punctiformis. Peritheciis tectis, subglobosis, atris, ostioliis erumpentibus. Sporibus oblongis, continuis, hyalinis, (0.0075×0.003 mm.).

On twigs of *Rhamnus Californica*. California (No. 2188).

Phoma Pittospori, *Cke. & Hark.*

Gregaria sparsave, parvula. Peritheciis atris subglobosis tectis, demum sursum erumpentibus, sporibus ellipticis, continuis, hyalinis, (0.008×0.0025 mm.).

On twigs of *Pittosporum*. California (No. 2294).

Accompanying *Diplodia Pittospori*, C. & H.

Phoma stigma, *Cke. & Hark.*

Caulicola. Perithecia minuta, sparsa vel subgregaria, punctiformis, semi-inmersa, poro pertusa, sporis ellipticis, continuis, hyalinis ($\cdot 006 \times \cdot 003$ mm.).

On stems of *Portulaca*. California (No. 1958).

Phoma heteromeles, *Cke. & Hark.*

Epiphylla. Peritheciis subsparsis, semi-immersis, sursum nudibus, conico-convexis, atris, nitidis. Sporis elongato-ellipticis, continuis, hyalinis, plerumque binucleatis ($\cdot 01\text{--}\cdot 012 \times \cdot 003$ mm.).

On dead leaves of *Heteromeles*. California (No. 2312, 2089).

Phoma discosiæformis, *Cke. & Hark.*

Epiphylla, subgregaria. Peritheciis parvulis, superne nudibus convexo-applanatis, nitidis, atrofusis. Sporis minutis, ovalibus continuis, hyalinis ($\cdot 005 \times \cdot 0025$).

On dead leaves of *Quercus aquifolia*. California (No. 2135).

Phoma Pritchardiae, *Cke. & Hark.*

Subgregaria. Peritheciis semi-immersis primo tectis, atris, nitidis, poro pertusis. Sporis cylindrico-ellipticis, utrinque obtusis, continuis, binucleatis, hyalinis ($\cdot 014 \times \cdot 003$ mm.).

On leaves of *Pritchardia*. California (No. 2167).

Sphæropsis macrospermum, *Cke. & Hark.*

Superficiale, sparsum. Peritheciis subglobosis, atris, punctiformibus, lævibus, vix papillatis. Sporis magnis, ellipticis, utrinque rotundatis, hyalinis ($\cdot 032\text{--}\cdot 04 \times \cdot 012$ mm.) granulis repletis, episorio crasso.

On fallen *Eucalyptus* bark. California (No. 2000 bis).

Resembling in habit some such *Sphæria* as *S. millegrana*.

Sphæropsis maculatum, *Cke. & Hark.*

Maculis atris, effusis, difformibus. Peritheciis gregariis, magnis globosis rugulosis erumpentibus. Sporis ellipticis, profusis, hyalinis ($\cdot 01 \times \cdot 005$ mm.)

On palms. California (No. 2546).

A species of a very distinct character, the perithecia being seated on large blackened patches.

Diplodia resurgens, *Cke. & Hark.*

Gregaria. Erumpens, demum subsuperficialis. Peritheciis globosis, atris, parvulis, nec papillatis, pertusis. Sporis arcte ellipticis, utrinque rotundatis, uniseptatis, nec in medio constrictis, læte brunneis ($\cdot 012\text{--}\cdot 014 \times \cdot 004$ mm.)

On twigs of *Rhus trilobata*. California (No. 2134).

Clearly distinct from *D. microspora*, Sacc.

Diplodia Sarothamni, *Cke. & Hark.*

Gregaria vel sparsa, tecta, subtiliter elevata, ostiolo atro pertusa; peritheciis depressis atris. Sporis elongato-ellipticis, obtusis, uniseptatis, vix constrictis, fuscis ($\cdot 03 \times \cdot 01$ mm.).

On twigs of *Sarothamnus*. California (No. 2094).

Diplodia Amygdali, Cke. & Hark.

Gregaria, tecta, corticem vix elevata. Peritheciis globoso-depressis, atris, papillatis. Sporis ellipticis, obtusis, uniseptatis, nec constrictis, fuscis ($\cdot 02\text{--}\cdot 002 \times \cdot 008$ mm.)

On Apricot twigs. California (No. 2076).

Distinct from *D. cerasorum*. Fekl.

Diplodia Pittospori, Cke. & Hark.

Sparsa vel subgregaria, tecta. Peritheciis subglobosis, atris, ostiolo punctiformi erumpente. Sporis ellipticis, diu hyalinis, continuis, demum uniseptatis, fuscis, nec constrictis ($\cdot 002 \times \cdot 012$ mm.).

On twigs of *Pittosporum*. California (No. 2171).

Diplodia millegrana, Cke. & Hark.

Superficialis, gregaria. Peritheciis subglobosis, atris, lævibus, minimis. Sporis ellipticis, uniseptatis, utrinque rotundatis, nec medio constrictis, læte fuscis ($\cdot 022\text{--}\cdot 03 \times \cdot 008$ mm.).

On decorticated *Acacia*. California (No. 2102).

In habit resembling *Sphaeria millegrana*. Schweinitz.

Diplodia lata, Cke. & Hark.

Gregaria, tecta. Peritheciis globoso-depressis, atris, in corticem nidulantibus, vix elevatis. Sporis ellipticis, uniseptatis, utrinque rotundatis, medio constrictis, atro fuscis ($\cdot 025 \times \cdot 016\text{--}\cdot 018$ mm.).

On branches of *Acacia*. California (No. 2283).

Characterised chiefly from its allies by the broad spores.

Chromosporium lateritium, Cke. & Hark.

Effusum, pulverulentum, læte lateritium, hyphis obsoletis. Sporis subglobosis ovatisve, hyalinis, roseo-tinctis ($\cdot 01 \times \cdot 009$ mm.).

On decorticated *Acer*. (No. 2483.)

Ceuthospora minima, Cke. & Hark.

Amphigena, parvula, convexa, atra, nitida ($\frac{1}{6}\text{--}\frac{1}{5}$ mm. diam.) sparsa vel in maculas irregularos aggregata, demum sursum fissurata. Sporis bacilliformibus, obtusis, hyalinis ($\cdot 02 \times \cdot 001$ mm.), sporophoris brevibus simplicibus.

On dead leaves of *Vaccinium*. California (No. 2555).

Pestalozzia inquinans, Cke. & Hark.

Epiphylla, sparsa, immersa, demum fissurato-erumpens, marginem circa sporis exudentibus inquinans. Sporis clavatis, trilocularibus, fuscis, utrinque hyalino-apiculatis, superne setis tribus ornatis, infra breviter pedicellatis ($\cdot 02 \times \cdot 005$ mm. sine setis).

On dead leaves of *Eucalyptus*. California (No. 2094).

Pestalozzia polychæta, Cke. & Hark.

Sparsa, tecta, demum elevata et stellato-fissurata, pustulis mediocribus. Sporis clavatis, trilocularibus, fuscis, utrinque hyalino-apiculatis, superne 4-5 ciliatis ($\cdot 025 \times \cdot 008$ mm. sine setis).

On twigs of *Sarothamnus*. California (No. 2095).

Glæosporium capsularum, Cke. & Hark.

Gregarium, punctiforme, ore fissurato-lacerato; sporis extrusis hinc illic in cæspitibus pallidis acervatis; sporis cylindræcis utrinque obtusis, gracilibus, rectis, continuis hyalinis ($\cdot 018\text{--}\cdot 02 \times \cdot 0025$ mm.).

On dead capsules of *Eucalyptus*. California (No. 2290).

Libertella Lonicerae, Cke. & Hark.

Sparsa, tecta, leviter bullata, demum pertusa. Conidiis fusiformibus arcuatis, continuis, hyalinis, in cirrhos pallidos emergentibus ($.02 \times .025$ mm. long).

On twigs of *Lonicera*. California (No. 2474).

Dictyosporium circinatum, Cke. & Hark.

Effusum, atro-fuliginosum, pulverulentum. Sporis subglobosis cordatisve, cellulosi (7-10) fuscis, cellulis globoso-compressis, circinatis, ut in *Helicomatis* simulantibus, absque hyphis (sporis $.035$ mm. cellulis $.01$ mm. diam.).

On decorticated *Platanus*. (No. 2434.)

Spores similar to those of *Helicoma Berkeleyi*, but entirely without threads of any kind. A somewhat aberrant *Dictyosporium*.

Dictyosporium opacum, Cooke & Hark.

Maculæforme, atrum. Sporis linguæformibus, applanatis, atro-fuligineis, subopacis ($.05-.06 \times .03-.035$ mm.). Cellulis seriatis parallelibusque (circa $.005$ mm. diam.) compositis, numquam dissiliantibus.

On culms of *Typha latifolia*. California. (No. 2507.)

Bactrodesmium opacum, Cke. & Hark.

Effusum, atrofusum. Hyphis repentibus, sparsis, ramosis, septatis, flexuosis. Sporis assurgentibus, clavato-cylindraceis; rigidis, sursum rotundatis, deorsum apiculato-attenuatis, atrofuscis, opacis, multiseptatis ($.1 \times .01$ mm.) cellulis diametro 2-3 plo. brevioribus.

On cedar plank. California (No. 2363).

Bactrodesmium clavulatum, Cke. & Hark.

Effusum, maculæforme, velutinum, atrum. Sporis clavatis, rectis, sursum rotundatis, deorsum in stipitem brevem attenuatis, 4-5 septatis, atrofuscis ($.045-.05 \times .015$ mm.).

On bark of *Eucalyptus*. California (No. 1999, 2322).

Mystrosporium turbinatum, Cke. & Hark.

Effusum, velutinum, atrum. Hyphis brevibus, tenuibus, subsimplicibus, septatis, plerumque sparsis. Sporis turbinatis, mox liberis, 3-5 septatis, superne rotundatis, obscurioribus, opacis, deorsum attenuatis, subhyalinis ($.025-.028 \times .01$ mm.).

On decorticated *Sequoia* (No. 2495.)

Spores broader than in *M. aterrinum* from which it differs also in not being densely fasciculate, and in the spores being soon deciduous. Quite distinct from *Helminthosporium Arecae* B. & Br.

Helminthosporium atro-olivaceum, Cooke & Hark.

Atro-olivaceum, molle, lanosum, effusum. Hyphis flexuosis, tenuissimis ($.0025-.003$ mm.) intertextis, plerumque simplicibus, breviter septatis; sporis clavatis ellipticisve, multe crassioribus, obscurioribusque, quinqueseptatis, fuscis ($.02-.025 \times .0075$ mm.).

On bark of *Acacia*. (No. 2328.)

Threads very delicate and flexuous, not half the diameter of the spores, which latter are very numerous.

Epochnium glaucum, Cke. & Hark.

Pulvinatum, vel breviter effusum, molle, glaucum vel caesio-glaucum. Hyphis tenuibus, repentibus, ramulosis, hyalinis. Sporibus sub-quadratis subglobosis, vel subpyriformibus ($.01-.015 \times .01$ mm.) cellulis 4-8 (plerumque 4) compositis, atro-fuscis.

On wood of oak (No. 2434), and of *Umbellularia* (No. 2445). California.

The component cells of the spores are about $.004$ mm. diam.

Cladosporium brunneum, Cke. & Hark.

Tenuiter effusum, atrum. Hyphis fasciculatis, erectis, multi-septatis, leniter flexuosis, brunneis, ad basim obscurioribus. Sporibus ellipticis, continuis, demum uniseptatis, nec constrictis, concoloribus ($.01-.014 \times .004$ mm.).

On dead leaves of *Hedera*. California (No. 1954).

Differs from its allies in the threads and spores being alike of a clear brown colour.

Stachybotrys scabra, Cke. & Hark.

Effusa, atra. Hyphis repentibus, ramosis, septatis, hyalinis, ramulis assurgentibus, ad apicem capitato-divisis. Sporibus subglobosis, inaequalibus, verrucosis, atro-fuscis ($.006-.01$ mm.).

On *Phormium tenax*. California (No. 2458).

Strumella Acaciæ, Cke. & Hark.

Gregaria, discoidea, convexa, superficialis, atra. Hyphis simplicibus, rectis, compactis, in massam olivaceis. Conidiis ovalibus, profusis, aerogenis, pallide olivaceis, primo utrinque truncatis ($.004-.005 \times .0025$ mm.).

On twigs and branches of *Acacia*. California (Nos. 2175, 2355).

Blennoria umbellulariæ, Cke. & Hark.

Stroma discoidea, atra, convexa, subgregaria, erumpens. Hyphis bis vel tri-dichotomis, erectis, hyalinis. Sporibus cylindraceutis, terminalibus, utrinque obtusis, continuis, hyalinis ($.035-.04 \times .004$ mm.).

On branches of *Umbellularia*. California (No. 1985).

Fusarium gynerium, Cke. & Hark.

Aurantiacum, tenuiter effusum, maculaforme. Sporibus fusiformibus, utrinque abrupte attenuatis curvatisve, quinquesepatis, nec constrictis ($.05 \times .006$ mm.).

On sheaths of *Gynerium argenteum*. California (No. 1978).

Fusarium cataleptum, Cke. & Hark.

Aurantio-rubrum, convexo-pulvinatum ($\frac{1}{2}$ -1.c.m.). Sporibus elongato-fusiformibus, arcuatis, utrinque longe attenuatis, multinucleatis ($.06-.08 \times .044$ mm.).

On branches of *Acacia*. California (No. 1981).

Fusarium Acaciæ, Cke. & Hark.

Roseum, minutum, punctiforme, gregarium, convexum. Sporibus fusiformibus, utrinque acutis, curvulis, quinquesepatis, hyalinis, ($.045-.05 \times .005$ mm.).

On twigs of *Acacia*. California (No. 2353).

Fusarium obtusisporum, Cke. & Hark.

Pallidum, erumpens, convexum, margine tenui, saepe confluentibus. Sporibus cylindraceis, curvulis, utrinque obtusis, indistincte triseptatis, hyalinis ($.03-.035 \times .004-.005$ mm.).

On twigs of *Acacia*. California (No. 2273).

Trichosporium fuscescens, Cke. & Hark.

Late effusum, subcompactum, fuscescens; hyphis ramosis, repentibus, densissime intertextis, septatis, fuscis. Sporibus acrogenis, inspersive, ovalibus vel subellipsoideis, laevibus, fuscis ($.008-.01 \times .077$ mm.).

On decorticated pine (No. 2491).

Zygodesmus marginatus, Cke. & Hark.

Effusus, pallidus, margine lato albo sterili circumdatus. Hyphis repentibus, septatis, intertextis, hyalinis. Sporibus globosis, numerosis, pallidis, spinulosis ($.006-.008$ mm.).

On pine wood. California (No. 2360).

Threads thicker than the diameter of the spores, or of equal thickness.

Tetrachia quadrigemina, Berk. & Curt.

This is the *Sporidesmium tessarthurum* B. & C. and the *Spegazzinia ornata* Sacc, found originally in Cuba, and Venezuela.

FLORA OF BRITISH FUNGI (HYMENOMYCETES).—The Rev. John Stevenson has now announced this work, in two vols., post 8vo., with illustrations by Mr. Worthington Smith. The price to subscribers is fixed at 10s. 6d. each volume, which will be increased on publication. The issue will depend on a sufficient number of subscribers being received by an early date, in which case the first volume will be published without delay. Address, either to Rev. John Stevenson, Glamis, N.B., or to Messrs. W. Blackwood and Sons, Edinburgh.

WOOLHOPE FUNGUS FORAY, 1884.—The Club day is fixed for Thursday, October 16th. Visitors will assemble for the week on Monday, October 13th. The Essex Field Club Foray—to extend over two days—will be held on Friday and Saturday, Oct. 3rd and 4th.

A REAL YANKEE PUFF-BALL.—In the "American Naturalist" for May, 1884, Professor C. E. Bessey announces that a specimen of *Lycoperdon giganteum* has been found in Herkimer County, N.Y., which was of an oval outline, and measured *five feet four inches* in its longest diameter and *four feet six inches* in its smallest diameter, whilst its height was but nine and a half inches. Professor Call says of it, that it was "much larger than the largest wash-tub we had at home."

NEW BRITISH FUNGI.

BY M. C. COOKE.

*(Continued from p. 70.)***Agaricus (Hebeloma) ischnostylus**, Cooke.

Pileus slightly viscid, smooth, even, convex, then expanded, and broadly umbonate, white or a little pallid at the disc, inodorous (or with a faint odour of *Spiraea*), margin thin, stem slender, equal, or a little thickened at the base, solid, smooth, naked, gills rounded behind and adnate, slightly serrate at the margin, whitish then argillaceous.

On the ground, amongst grass. Shrewsbury.

Pileus 1-2 inches broad, stem 2 inches long, $\frac{1}{8}$ - $\frac{1}{6}$ inch thick. Spores $\cdot 012 \times \cdot 0075$ mm. Belongs to the section *Denudati* and allied to *Ag. nudipes*, but evidently not any form of that species. Will be figured in the "Illustrations."

Agaricus (Naucoria) cidaris, Fr. Hym. Eur. 253.

Pileus rather fleshy, *conical then campanulate*, even, clay coloured cinnamon, when dry tan-coloured, margin undulated, striate, stem hollow, *fusiform* short, smooth *dark brown*, gills affixed, then seceding, ventricose crowded, honey-coloured.

In pine woods, and on the ground around trunks. Near Hereford (Dr. Bull).

Pileus an inch high and broad, or more; stem $1\frac{1}{2}$ in. long. Inodorous.

Hydnum (Resupinati) stipatum, Fr. Hym. Eur. 617.

Whitish. Subiculum broadly effused, flocculoso-furfuraceous, crustaceous, adnate, spines crowded, granuliform, rather obtuse and denticulate.

On rotten wood. Carlisle (Dr. Carlyle).

Differing from the other species with white spines in the furfuraceous stratum. The spines are obtuse and crowded, very few being toothed. The whiteness is retained in drying.

Hydnum Weinmanni, Fr. Hym. Eur. 613.

The typical form has been found by Dr. Carlyle, near Carlisle, and also, what appears to be, a variety, which differs in being of a deep bay-brown when fresh, with obtuse spines of the same colour. This species was only found previously in this country by the late Rev. A. Bloxam.

Morchellia Smithiana, Cooke *Mycographia* t. 83.

This species has again been found and forwarded to us in a fresh state from Malton, Yorks. There is no doubt in our minds of its being a good species. The pileus of the specimen in question was four inches in diameter, and four inches in height. The sporidia are proportionately narrower than in allied species, being about $\cdot 02 \times \cdot 008$, and although sometimes as long as $\cdot 022$ or $\cdot 023$ mm, the

width is not increased. The paraphyses are very thick. The pits of the pileus half an inch in diameter, and equally deep. The stem densely but shortly tomentose. Specimen preserved in the Herbarium of the Royal Gardens, Kew.

Tilletia sphærococca, *F. de Waldh. Bull. Mosc.* 1867 p. 255.

Mycelium black. Spores globose or obtuse-ovoid ($\cdot 026$ – $\cdot 03$ mm.) dark brown reticulations of the epispore more prominent than in *Tilletia caries*.—*Mem. sur les Ustilag.* p. 254.

In the ovaries of *Agrostis pumila*. Glen Cluny (*F. C. S. Roper*).

Entyloma canescens, *Schröter, Beitr. z. Biol. Pflanzen* 11., 372.

Leafspots (1–3 mm. diam.) at first whitish, then turning brown or black. Spores nearly spherical ($\cdot 008$ – $\cdot 012$ mm. diam.), smooth almost colourless, and rather thin-walled. *Scottish Naturalist* *Ap.* 1884, p. 125 and 181. *Protomyces Fergussoni*. *B. & Br. Herb. Berk. No.* 5247.

On leaves of *Myosotis*. New Pitsligo and Aberdeen.

Entyloma Calendulæ, *De Bary, Bot. Zeit.* 1874.

Spores rounded or angular $\cdot 008$ – $\cdot 012$ mm. (mostly $\cdot 01$ – $\cdot 012$ mm.) with a sporoderm of two membranes, yellowish. *Fisch. de Waldh. Ustilag.* p. 246. *Scottish Naturalist* *Jan.*, 1884, p. 124. *Protomyces Hieracii Berk. in Herb. No.* 5248.

On leaves of *Hieracium*. Noran woods.

Doassansia alismatis, *Cornu. Ann. Sci. Nat.* (1883) xv., 285.

Effused, circinating, on both surfaces of the leaves. Sori $\cdot 2$ – $\cdot 28$ mm. diam. \times $\cdot 16$ – $\cdot 2$ mm. deep. Spores numerous, nearly spherical ($\cdot 008$ mm. diam.) pale brown, and thin-walled. Cells of outer wall brown, and about $\cdot 02$ mm. \times $\cdot 008$ – $\cdot 01$ mm. *Scottish Naturalist* *Ap.* 1884, p. 180. *Protomyces macularis Fckl. Symb. Myc.* p. 75. *Thum. Myc. Univ. No.* 1417. *Protomyces Sagittariæ Fckl. Vize Micr. Fungi.* *Protomyces Alismatis, Berk. in Herb. Æcidium incarcerationum, Berk. in Rabh. Fung. Eur. No.* 1492. *Uredo Sagittariæ. West. and Wall. Herb. Belge. Physoderma maculare (Wallr.) in Thum. Myc. Univ. No.* 1417.

On leaves of *Alisma plantago*, and *Sagittaria*.

Oidium pactolinum, *Cooke.*

Tenuiter effusum, aureo-fulvum. Hyphis brevissimis, tenuis, vix conspicuis. Conidiis subglobois, concatenatis, utrinque polo primo truncatis, demum (liberis) rotundatis, plasmate aureo, subgranuloso repletis ($\cdot 01$ mm. diam.).

Forming a thin stratum, as if sprinkled with gold powder. Threads so short as scarce to be detected. Conidia in chains of from 6 to 10 nearly globose cells, at first longer than broad, and truncate at the ends, but at maturity, and when detached, becoming globose, with a thin hyaline membrane, and granular golden yellow contents.

On living leaves of *Jasminum sambac* in stove. Isleworth (G. Nicholson).

Acmosporium tricephalum, *Phillips in Gard. Chron.* Mar. 8, 1884, fig. 61.

Small oval white tufts $\frac{1}{8}$ in. long formed of a layer of loosely interwoven colourless hyphæ, from which arise simple erect septate stems, once or twice branched in the upper part, the extremities of each branch again divided into three short branchlets, which are slightly enlarged upwards, and each terminated by a globose head on which are seated several globose spores. Total height 25 mm.; width of stem .01 mm.; diameter of globose head .014 mm.; spores .005 mm.

On fallen leaves of *Cryptomeria japonica*.

BRITISH FRESH-WATER ALGÆ.

Chroolepus umbrinum (*Kütz.*) has recently been obtained by Mr. Varenne in Essex. He says, "It seems frequent on the bark of oak and elm trees, in woods, and in the more open country about Kelvedon."

Microthamnion vexator (*Cooke*) has been found by Mr. F. Bates in the neighbourhood of Leicester, also

Spirogyra velata (*Cleve*) in excellent fruit.

Symphysiphon Hoffmanni (*Ag.*) was detected by us a few days since in one of the stoves of the Royal Botanic Society, in Regent's Park. M. C. C.

NOTES ON HYPOCREACEÆ.

(Continued from p. 83.)

Claviceps Wilsoni, *Cooke in Grevillea* XII., p. 77. *Barya aurantiaca*, *Plow. & Wils., Gard. Chron.* Feb. 9, 1884.

This has nothing in common with the genus *Barya*, to which it has been referred, that being only a caespitose *Acrospermum*.

Cordyceps isarioides, *Curt. in Cat. Plants. N. Carolina*, p. 138.

Cordyceps gryllotalpæ, *Curt. in Cat. Plants. N. Carolina*, p. 138.

Of both these nothing but the names appear to have been published.

Hypocrea dacrymycella, *Cooke & Plow.*

Stromatibus gregariis (3-4 mm.), *superficialibus pulvinatis*, *humectis tremelloideis*, *subrufis*, *demum siccis collabescentibus*, *ex ostiis obscurioribus punctiformibus punctatis*. *Ascis cylindraceis*. *Sporidiorum articulis æqualibus*, 16, *subglobosis leniter granulatis*, *olivaceis* (.006-.008 × .006 mm.).

On Scotch fir. Brandon, England (*C. B. Plowright*).

Hypocrea flavo-virens, *Berk. in Herb. No. 8305*.

Pulvinata, *orbicularis*, *demum centro depresso* (1-3 mm.) *flavo-virescens*, *ostiis punctiformibus*, *atro-viridis*. *Ascis cylindraceis*. *Sporidiorum articulis subglobosis truncatis*, *olivaceis*.

On bark. Nilgherries, India.

Nectria infusaria, *Cooke & Hark.*

Cæspitosa, erumpens, pallide rubra. Peritheciis paucis, ovalibus, ceraceo-mollis subconfluentibus, lævibus, glabris, 5-10 in stromatice gerentibus. Ascis cylindræis octosporis. Sporidiis uniseriatis ellipticis, obtusis, uniseptatis, nec constrictis, hyalinis demum pallidis ($\cdot 01 \times \cdot 0045$ mm.).

Conidiis plerumque consociatis, vel in pustulis præcedentibus, fusarioideis, stromate pulvinato, rubro-pallescente, sporis curvulis, utrinque acutis, triseptatis, gracilibus, hyalinis ($\cdot 03\text{--}\cdot 04 \times \cdot 0025$ mm.)=*Fusarium Acacie*, C. & H.

On *Acacia* twigs. (No. 2362, 2268.) California.

Byssonectria chrysocoma, *Cke. & Hark.*

Lignicola. Stroma fibroso-byssioidea, aurea, effusa. Peritheciis minutis gregariis ($\cdot 1\text{--}\cdot 15$ mm.) obovatis, tenuibus, flavido-fuscis, in stromate semi-immersis. Ascis clavatis, octosporis. Sporidiis biseriatis arcte ellipticis, uniseptatis hyalinis ($\cdot 01 \times \cdot 002\text{--}\cdot 0025$ mm.).

On wood of *Eucalyptus*. (No. 2321.) California.

Byssonectria rosella, *Cke. & Hark.*

Tenuis, effusa, rosella. Hyphis repentibus intertextis. Peritheciis minutis inspersis obscurioribus (incompletis). Conidiis fusarioideis lunatis, utrinque acutis quinquesepatis, plerumque nodulosus hyalinis inmixtis ($\cdot 04 \times \cdot 005\text{--}\cdot 006$ mm.).

On dead grass. California. (No. 2241.)

Unfortunately, in an immature condition, the perithecia alone being formed. The conidia appear to present distinctive characters.

Dialonectria filicina, *Cke. & Hark.*

Sparsa vel gregaria, aurantia, intra squamulas filicis nidulans. Peritheciis obovatis, lævibus, glabris subnitidis, vix papillatis. Ascis cylindræis octosporis. Sporidiis elliptico-cylindricis, utrinque obtusis hyalinis ($\cdot 008 \times \cdot 0025$ mm.).

On stipes of tree-fern. California. (2133.)

AcrospERMUM Robergeanum, *Desm. Ann. des. Sci. Nat. ser. 3, t. xvi. (1851) 300, Desm. Crypt., No. 51.*

Sparsum minutum clavatum cylindricum brunneo-pallidum, apice et basi albidum siccum nigrescens complanatum. Ascis cylindræis, longissimis, tenuibus, octosporis ($\cdot 25$ mm.) sporidiis parallele stipatis filiformibus, ascis longitudine subæqualibus, hyalinis.

In foliis semiputridis *Corni sanguineæ*.

AcrospERMUM fultum, *Harkness in Trans. California Acad. Sci. 1884, p. 47.***AcrospERMUM (Barya) parasiticum**, *Fckl. Sacc. Syll. No. 5003. AcrospERMUM stromaticum, Cooke in Grev. VIII., 38. Epichlœ virescens Quelet in Grev. VIII., 38. AcrospERMUM virescens, Sacc. Syll., No. 5870.*

Whichever description may prove to be most accurate, we have at least satisfied ourselves, by examination of authentic specimens of Fuckel's and Quelet's plants, that both are in all respects absolutely identical.

SYNOPSIS PYRENOMYCETUM.

SUB-ORD. **Pyrenomycetes.***Fam. 1. HYPOCREACEÆ, De Not.*

Simplices vel compositæ. Perithecia subcarnosa vel ceraceo-membranacea, læte colorata numquam carbonacea. Ostiolo dehiscencia. Stroma, ubi adest molliusculum, carnosio-ceraceum, rarius byssinum. Sporidia plerumque hyalina rarius fusca.—*Sacc. Syll.* ii. 447.

Sub-Fam. I. HYPOCREOIDEÆ.

GEN. 1. **CLAVICEPS**, *Tul.*—Stroma verticale, e sclerotio. Sporidia filiformia hyalina.—*Sacc. Syll.* ii. 564.

- | | | | |
|----------------------------------|-------|-------------------------------------|------|
| 1. purpurea, <i>Fr.</i> ... | *5005 | 4. pusilla, <i>Ces.</i> ... | 5008 |
| 2. microcephala, <i>Tul.</i> ... | 5006 | 5. setulosa, <i>Quel.</i> ... | 5009 |
| 3. nigricans, <i>Tul.</i> ... | 5007 | 6. Wilsoni, <i>Cke., Grev.</i> xii. | 77 |

GEN. 2. **CORDYCEPS**, *Fries.*—Stroma verticale, entomogenum, subinde mycogenum, clavatum. Sporidia filiformia, in articulos mox secedentia, hyalina.

A. Entomogenæ.

* Stroma simplicia, clavula rotundata vel elliptica.

- | | | | |
|---------------------------------------|------|--------------------------------------|------|
| 7. entomorrhiza (<i>Dicks.</i>) | 5012 | 13. dipterigena, <i>B. & Br.</i> | 5053 |
| <i>v. gracilis, Grev.</i> ... | 5001 | 14. myrmecophila, <i>Ces.</i> | 5010 |
| <i>v. menesteridis, Berk.</i> | | 15. Humberti, <i>Rob.</i> ... | 5045 |
| 8. insignis, <i>Cke., Grev.</i> xii. | 38 | 16. coccigena, <i>Tul.</i> ... | 5047 |
| 9. Wallaysii, <i>West</i> ... | 5014 | 17. Helopis, <i>Quel.</i> ... | 5025 |
| 10. armeniaca, <i>B. & C.</i> ... | 5016 | 18. cinerea, <i>Tul.</i> ... | 5026 |
| 11. flavella, <i>B. & C.</i> ... | 5022 | 19. unilaterialis, <i>Tul.</i> ... | 5027 |
| 12. Ditmari, <i>Quel.</i> ... | 5024 | 20. australis, <i>Spieg.</i> ... | 5028 |

** Stroma furcata, vel ramosa.

- | | | | |
|--|------|-------------------------------|------|
| 21. bicephala, <i>B.</i> ... | 5029 | 23. sobolifera, <i>B.</i> ... | 5021 |
| 22. palustris, <i>B. & Br.</i> ... | 5018 | 24. racemosa, <i>B.</i> ... | 5049 |

* * Stroma simplicia, clavula elongata.

- | | | | |
|--|------|---|------|
| 25. Gunnii, <i>Berk.</i> ... | 5030 | 35. Ravenelii, <i>B. & C.</i> | 5035 |
| 26. curculionem, <i>Tul.</i> ... | 5013 | 36. superficialis, <i>Peck.</i> ... | 5036 |
| 27. sphæcophila, <i>Kl.</i> ... | 5015 | 37. { acicularis, <i>Rav.</i> ... | 5037 |
| 28. stylophora, <i>B. & Br.</i> | 5017 | { = <i>Carolinensis</i> , <i>B. & Br.</i> | |
| 29. gentilis, <i>Ces.</i> ... | 5020 | 38. typhulæformis, <i>B. & Cke.</i> | |
| 30. alutacea, <i>Quel.</i> ... | 5023 | <i>Grev.</i> xii. 78 | |
| 31. pistillariæformis, <i>B. & Br.</i> | 5019 | 39. falcata, <i>Berk.</i> ... | 5040 |
| 32. militaris, <i>Linn.</i> ... | 5031 | 40. sinensis, <i>B.</i> ... | 5051 |
| 33. memorabilis, <i>Ces.</i> ... | 5032 | 41. Barnesii, <i>Thw.</i> ... | 5052 |
| 34. { Robertsii, <i>Hook.</i> ... | 5034 | 42. fuliginosa, <i>Ces.</i> ... | 5042 |
| { = <i>C. Hugelii</i> , <i>Corda.</i> | | | |

* These numbers, to the right, are those of the species in Saccardo's "Sylloge."

** Stroma ramosa vel fasciculata.

43. caloceroides, *B. & C.* 5050 = *cæspitosa*, *Tul.* ... 5043
 44. Sinclairi, *Berk.* ... 5054 45. Taylora, *Berk.* ... 5041

*** Perithecia in stromate conspersa vix capitata.

46. sphingum, *Tul.* ... 5033 47. memorabilis, *Ces.* ... 5032
B. Mycogenæ.

48. ophioglossoides, *Ehr.* 5038 49. capitata, *Holms.* ... 5039

C. Species incertæ.

50. melolonthæ, *Tul.* ... 5044 53. albida, *B. & C. in Herb.*
 51. Miquelii, *Tul.* ... 5046 54. herculea (*Schw.*) ... 5055
 52. Montagnei, *B. & C.* ... 5048 55. adpropinquans, *Ces.* 5056

GEN. 3. **CORALLOMYCES**, *B. & Curt.*—Stroma ramosum fili-
 forme, perithecia nuda ramis stromatis insita.—*Sacc. Syll.* ii. 519.

56. elegans, *B. & C.* ... 4832

GEN. 4. **EPICHLÖE**, *Fries.*—Stroma sessile effusum, culmos
 plerumque circumambiens. Sporidia filiformia, *Sacc. Syll.* ii. 598.

57. typhina (*P.*) ... 5057 61. strangulans (*M.*) ... 5058
 58. cinerea, *Berk.* ... 5059 62. atramentosa, *B. & C.* 5066
 59. pulvinulus, *Berk.* ... 5068 63. Bambusæ, *B. & Br.* 5064
 60. semiamplexa, *B. & C.* 5067

GEN. 5. **GLAZIELLA**, *Berk.*—Stroma subglobosum, carnosum
 laticolor, sporidia plerumque dubium.—*Sacc. Syll.* ii. 581.

64. abnormis (*B. & C.*) ... 5071 67. ceramichroa (*B. & Br.*) 5074
 65. aurantiaca, *Berk.* ... 5072 68. vesiculosa, *Berk.* ... 5075
 66. splendens, *Berk.* ... 5073

GEN. 6. **HYPOCREA**, *Fries.*—Perithecia stromate pulvinato vel
 effuso subsuperficiale immersa.—*Sacc. Syll.* ii. 520.

A. PODOCROA, *Sacc.* Stroma verticaliter elongata.

69. alutacea, *P.* ... 4882 72. brevipes, *M.* ... 4886
 70. larvata, *M.* ... 4884 73. grossa, *B.* ... 4874
 71. Petersii, *B. & C.* ... 4885

B. EU-HYPOCREA, *Sacc.* Stroma pulvinata, disciforma vel
 effusa. Sporidia didyma, articulis secedentibus.

a. Stroma pulvinata vel discoidea.

† Sporidia hyalina.

74. cerebriiformis, *B.* ... 4897 81. patella, *C. & P.* ... 4849
 75. peltata, *Jungh.* ... 4916 82. laetior, *B. & C.* ... 4867
 76. rufa (*P.*) ... 4834 83. pulvinata, *Fckl.* ... 4835
 77. vinosa, *Cke.* ... 4846 84. lycogala, *K. & C.* ... 4847
 78. jecorina, *B. & Br.* ... 4864 85. tremelloides, *Sch.* ... 4839
 79. discella, *B. & Br.* ... 4869 86. Richardsoni, *B. & M.* 4873
 80. pezizoides, *B. & Br.* ... 4865 87. umbrina, *Cke., Grev.* xii. 78

88. subrufa, *B. & Cke.*, xii. 79 95. palmicola, *B. & C.* 4862
 89. minima, *Sacc.* ... 4837 96. lenta, *Tode.* ... 4836
 90. olivacea, *C. & E.* ... 4838 97. Schweinitzii, *Fr.* ... 4840
 91. insignis, *B. & C.* ... 4907 98. atrata, *Karst.* ... 4841
 92. stereorum, *Schw.* ... 4915 99. rigens, *Fr.* ... 4844
 93. saccharina, *B. & C.* ... 4906 100. contorta, *Schw.* ... 4859
 94. subcitrina, *K. & C.* ... 4848 101. solenostoma, *B. & Rav.* 4887

†† Sporidia colorata.

102. gelatinosa, *Tode.* ... 4850 109. chrysostigma, *K. & C.* 4855
 103. multiformis, *B. & R.* 4861 110. sulfurella, *K. & C.* 4854
 104. dacrymycella, *C. & Pl.*,
 Grev. xii. 100 111. spinulosa, *Fckl.* ... 4851
 105. chlorospora, *B. & C.* 4852 112. flavovirens, *Berk.*,
 Grev. xii. 100
 106. chromosperma, *C. & Pk.* 4857 113. Moliniæ, *Pass.* ... 4856
 107. aureoviridis, *Pl. & C.* 4853 114. rugulosa, *B. & Cke.*,
 Grev. xii. 79
 108. catoptron, *B. & Br.*... 4863

††† Color non indicatus.

115. hæmatoplaca, *Mont.*... 4858 116. fibula, *d'Not* ... 4868

b. *Stroma effusa.*

† Sporidia hyalina.

117. citrina (*P.*) ... 4875 126. deplanata, *B. & Br.* 4871
 118. Karsteniana, *Niessl.* } 4876 127. Cesatiana, *Cke.*, *Grev.*
 = *fungicola*, *Karst.* } xii. 78
 119. ochroleuca, *B. & Rav.* 4901 128. hypomycella, *Sacc.* 4880
 120. armeniaca, *B. & C.* ... 4904 129. lactea, *Fr.* ... 4878
 121. albofulva, *B. & Br.* ... 4866 130. farinosa, *B. & Br.* 4879
 122. delicatula, *Tul.* ... 4877 131. stipata, *Lib.* ... 4881
 123. polyporoidea, *B. & C.* 4905 132. colliculosa, *Fries.*,
 Grev. xii. 79
 124. sulfurea, *Schwz.* ... 4909
 125. cervina, *B. & C.* ... 4896

d. *Stroma obsoleta.*

133. inclusa, *B. & Br.* ... 4895

C. PHÆOSPORA. *Stroma pulvinata* vel *discoidea*. Sporidia elliptica fusca, episporio asperulo.

134. rhytidospora, *Ces.* ... 4894

D. SELINIA, *Karst.* (*Sacc.* ii, 457). *Stroma verruciforme*, villosulum. Sporidia continua hyalina.

- 134*. pulchra (*Wint.*) ... 4586

a. *Stroma effusa.*

135. Nilgherrensis, *B. & Cke.*, 136. Fendleri, *B. & Curt.*,
 Grev. xii. 79 *Grev.* xii. 80

b. *Stroma discoidea.*

137. consimilis, *Ellis Grev.* xii. 79. 138. viridans, *B. & C.* 4892

E. CLINTONIELLA, *Sacc.* Stromate variis. Sporidiis fusoides raro ellipsoideis uni-septatis.

- | | |
|--|---|
| 139. corticioides, <i>B. & Br.</i> 4890 | 145. apiculata, <i>C. & Pk.</i> 4889 |
| 140. carnea, <i>K. & Cke.</i> ... 4842 | 146. fusigera <i>B. & Br.</i> 4891 |
| 141. impressa, <i>M.</i> ... 4893 | 147. Carteri, <i>B. & Cke.,</i>
<i>Grev.</i> xii. 79 |
| 142. fusca, <i>Mont.</i> ... 4860 | 148. tuberculariformis,
<i>Rehm.</i> ... 4845 |
| 143. undulata, <i>B. & Cke.,</i>
<i>Grev.</i> xii. 79 | |
| 144. citrinella, <i>Ellis</i> ... 4843 | |

a. HYPOCREOPSIS, *Karst.* Stroma tuberoso-carnosum, lobatum. Sporidia ellipsoidea uniseptata, hyalina.

149. riccioidea (*Bolt.*) ... 6173

F. BROOMELLA (*Sacc. Syll.* ii. 557.) Sporidia subfusoides 2-pluriseptata.

- | | |
|--|---|
| 150 vitalbæ <i>B. & Br.</i> ... 4987 | 152 chlorina, <i>Cke.</i> ... 4989 |
| 151 Ravenelii, <i>Berk.</i> ... 4988 | 153 nephidium, <i>B. & Br.</i> 3357 |

G. HYPOCRELLA (*Sacc. Syll.* ii. 579.) Sporidia filiformia.

§ *Perithecia concreta.*

- | | |
|--|--|
| 154. phyllogena, <i>M.</i> ... 5060 | 159. hypoxylon, <i>Peck.</i> 5069 |
| 155. discoidea, <i>B. & Br.</i> ... 5061 | 160. maculæformis, <i>B. & C.</i> 4883 |
| 156. scutata, <i>Cke.</i> ... 5062 | |
| 157. Palmæ, <i>B. & Br.</i> ... 5063 | § § <i>Perithecia libera.</i> |
| 158. cyperacearum, <i>B. & C.</i> 5065 | 161 tuberiformis, <i>B. & R.</i> 4902 |

Species imperfectæ.

- | | |
|--|--|
| 162 parasitans, <i>B. & C.</i> ... 4870 | 169. sublobata, <i>Schw.</i> 4911 |
| 163. semiorbis, <i>B.</i> ... 4898 | 170. cupularis, <i>Fr.</i> ... 4912 |
| 164. atrovirens, <i>M.</i> ... 4899 | 171. enteromorpha, <i>Lev.</i> 4913 |
| 165. Berggreni, <i>Cke.</i> ... 4900 | 172. molliuscula, <i>Schw.</i> 4914 |
| 166. subviridis, <i>B. & C.</i> ... 4903 | 173. variabilis, <i>Curr.</i> ... 4917 |
| 167. artocreas, <i>B. & Br.</i> ... 4908 | 174. armata, <i>Fr.</i> ... 4888 |
| 168. sterilior, <i>Schw.</i> ... 4910 | |

GEN. 7. **POLYSTIGMA.** *Pers. Sacc.* ii. 458.—Stroma effusum, fulvum vel rubrum, phyllogenum.

- | | |
|------------------------------------|----------------------------------|
| 175. rubrum, <i>Pers.</i> ... 4587 | 177. Bumeliæ, <i>S.</i> ... 4589 |
| 176. fulvum, <i>D. C.</i> ... 4588 | |

GEN. 8. **VALSONECTRIA.** *Speg. Sacc.* ii. 519.—Perithecia valsoideo-circinantia, tecta.

* Sporidia uniseptata.

178. pulchella, *Speg.* ... 4833

** THYRONECTRIA (*Sacc.* ii. 561). Sporidia muriformia.

- | | |
|--------------------------------------|-----------------------------------|
| 179. patavina, <i>Sacc.</i> ... 4997 | 180. pyrochlora, <i>Awd.</i> 4998 |
|--------------------------------------|-----------------------------------|

Sub-Fam. II. NECTRIÆ.

GEN. 9. **SPHÆROSTILBE.** (*Tul.*) *Sacc. Syll. ii.* 511.—Perithecia *Nectriæ* sed in basi vel in consortio fungilli condiphori verticaliter elongata.

* *Sporidia uniseptata.*

- | | |
|--|--|
| 181. flammæa, <i>Tul.</i> ... 4807 | 191. cinnabarina, <i>Tul.</i> 4817 |
| 182. sanguinea, <i>Fckl.</i> ... 4808 | 192. variabilis, <i>B. & Br.</i> 4818 |
| 183. cæspitosa, <i>Fckl.</i> ... 4809 | 193. incerta, <i>Ces.</i> ... 4819 |
| 184. aurantiaca, <i>Tul.</i> ... 4810 | 194. hypocercoides <i>K. & Cke.</i> ... 4820 |
| 185. coccophila, <i>Tul.</i> ... 4811 | |
| 186. hyalina, <i>Fckl.</i> ... 4812 | 195. repens, <i>B. & Br.</i> ... 4821 |
| 187. gracilipes, <i>Tul.</i> ... 4813 | 196. nitida, <i>B. & C.</i> ... 4822 |
| 188. Wrightii, <i>B. & C.</i> ... 4814 | 197. lateritia, <i>B. & C.</i> ... 4823 |
| 189. fusca, <i>Fckl.</i> ... 4815 | 198. rosea, <i>K. & Cke.</i> ... 4824 |
| 190. flavo-viridis, <i>Fckl.</i> ... 4816 | 199. dubia, <i>B.</i> ... 4825 |

** MEGALONECTRIA. *Sacc. Syll. ii.* 560.*Sporidiis muriformibus.*

- | | |
|---|--|
| 200. {pseudo-trichia, <i>Schw.</i> 4995 | 201. nigrescens, <i>K. & Cke.</i> ... 4996 |
| {hypocrateriformis, <i>B. & Br.</i> | |

GEN. 10. **NECTRIA.** *Fries.*—Perithecia libera, cæspitosa, subinde stromati conidifero insidentia. *Sporidia oblongata.*

A. EU-NECTRIELLA. *Sporidia continua.*

* Asci octospori.

- | | |
|--|-------------------------------------|
| 202. miltina, <i>Mont.</i> ... 4547 | 204. fusarioides, <i>Berk.</i> 4561 |
| 203. microspora, <i>C. & E.</i> 4555 | |

** CHILONECTRIA. Asci polyspori.

- | | |
|---|---------------------------------------|
| 205. cucurbitula, <i>Curr.</i> ... 4574 | 207. Rosellinii, <i>Car.</i> ... 4577 |
| 206. sulphurella, <i>Not.</i> ... 4575 | 208. myriospora, <i>Cr.</i> ... 4576 |

* * APONECTRIA, *Sacc. ii.* 516.

- | | |
|---|------------------------------------|
| 209. inaurata, <i>B. & Br.</i> ... 4826 | 210. coryli, <i>Fckl.</i> ... 4674 |
|---|------------------------------------|

B. *Sporidia uniseptata.** METANECTRIA, *Sacc. ii.* 517. Asci polyspori.

- | |
|---|
| 211. citrum (<i>Wallr.</i>) ... 4828. |
|---|

** Asci octospori.

- | | |
|---|--|
| 212. cinnabarina, <i>Tode.</i> ... 4662 | 221. Russellii, <i>B. & C.</i> 4668 |
| 213. ribis, <i>Tode.</i> ... 4663 | 222. coccinea, <i>P.</i> ... 4670 |
| 214. decolorans, <i>Fr.</i> ... 4797 | 223. Desmazierii, <i>Not.</i> 4672 |
| 215. punicea, <i>Kze.</i> ... 4664 | 224. sub-coccinea, <i>S. & E.</i> 4673 |
| 216. rubicarpa, <i>C.</i> ... 4665 | 225. ditissima, <i>Tul.</i> ... 4671 |
| 217. Celastri, <i>S.</i> ... 4669 | 226. eximia, <i>K. & C.</i> ... 4667 |
| 218. illudens, <i>Berk.</i> ... 4736 | 227. vulgaris, <i>Speg.</i> ... 4676 |
| 219. verrucosa, <i>S.</i> ... 4790 | 228. Bogosarum, <i>Pass.</i> 4677 |
| 220. sinopica, <i>Fr.</i> ... 4666 | 229. Zelandica, <i>Cke.</i> ... 4678 |

230. cucurbitula, *Tode.* ... 4680 246. armeniaca, *Tul.* ... 4675
 231. heterosperma, *K. & C.* 4682 247. chlorella, *Fr.* ... 4694
 232. hematochroma, *Speg.* 4683 248. ochroleuca, *Schw.* 4789
 233. laticolor, *B. & C.* ... 4684 249. chrysites, *Wallr.*... 4695
 234. bactridioides, *B. & B.* 4679 250. collabens, *B. & Cke.,*
 Grev. xii. 81
 235. infusaria, *Cke. & H.*
 Grev. xii. 101 251. applanata, *Fr.* . . 4697
 236. Magnusiana, *Rehm.* ... 4685 252. discophora, *M.* ... 4698
 237. nigropunctata, *Speg.*... 4686 253. rhizogena, *Cke.* ... 4699
 238. nigrescens, *Cke.* ... 4687 254. alutacea, *B. & Cke.* l.c. 81
 239. bicolor, *B. & C.* ... 4690 255. stilbosporæ, *Tul.*... 4702
 240. aurantiicola, *B. & Br.*... 4691 256. stenospora, *B. & Br.* 4703
 241. gyrosa, *B. & Br.* ... 4681 257. selenosporii, *Tul.*... 4704
 242. aureofulva, *C. & E.* ... 4692 258. aglæothele, *B. & C.* 4732
 243. offuscata, *B.* ... 4688 259. carneo-rosea, *Rehm.* 4709
 244. ochracea, *Grev.* ... 4689 260. Passeriniana, *Cke.,*
 Grev. xii. 81
 245. aquifolii, *Fr.* ... 4693

a. CRYPHONECTRIA. Stroma grumosa.

261. varicolor, *Fckl.* ... 4784 262. abscondita, *Sacc.* 4785
 b. LEPIDONECTRIA, *Sacc.* ii. 503. Perithecia furfuracea vel
 squamulosa.

263. Ralfsii, *B. & Br.* ... 4767 270. mammoidea, *Plow.* 4774
 264. apocyni, *Pk.* ... 4769 271. hypocreoides, *B. & Cke.,*
 Grev. xii. 81
 265. subquaternata, *B. & C.* 4701 272. dematiosa, *S.* ... 4782
 266. furfuracea, *K. & C.* ... 4770 273. pulcherrima, *B. &*
 Br. ... 4962
 267. diploa, *B. & C.* ... 4771 274. Otagensis, *Curr.* 6174
 268. dealbata, *B. & R.* ... 4772
 269. pityrodes, *Mont.* ... 4773

C. CALONECTRIA, *Sacc.* ii. 540. *Sporidia pluriseptata.*

* *Sporidia* 2-5 septatæ.

275. cucurbitula, *Fr.* ... 4934 278. Oudemansii, *West.* 4948
 276. decora, *Wallr.* ... 4936 279. citrino-aurantia, *Lac.* 4950
 277. rigidiuscula, *B. & Br.* 4938 280. balsamea, *C. & Pk.* 4804

** *Sporidia* 6-10 septata.

- 281 {aurigera, *B. & Br.* ... 4931 282 polythalama, *B.* ... 4933
 {=flavitecta, *B. & C.* 4935

* * *Sporidia* muriformia.

283. Lamyi, *Desm.* ... 4990 287. Tasmanica, *B.* ... 4795
 284. Berolinensis, *Sacc.* ... 4991 288. fenestrata, *B. & C.*
 Grev. xii. 81
 285. megalospora, *Sp.* ... 4992
 286. austro-americana, *S.* 4993

D. *Species dubiæ.*

289. aurora, *Fries* ... 4788 290. dubia, *K. & C.* ... 4800

GEN. 11. **HYPOMYCES**, *Fries.* *Sacc.* ii. 466.—Subiculum byssino-velutinum, fungicolum.

* PECKIELLA. Sporidia continua.

- | | |
|---|---|
| 291. viridis, <i>A. & S.</i> ... 4633 | 297. hyalinus, <i>S.</i> ... 4639 |
| 292. Tulasneanus, <i>Plow.</i> ... 4643 | 298. transformans, <i>Pk.</i> 4640 |
| 293. chrysostomus, <i>B. & Br.</i> 4635 | 299. Banningiæ, <i>Pk.</i> ... 4641 |
| 294. Van-Bruntianus, <i>Ger.</i> 4636 | 300. ater, <i>Fr. Grev.</i> xii. 80 |
| 295. violaceus, <i>Fr.</i> ... 4637 | 301. apiosporus, <i>Cke., Grev.</i> xii. 80 |
| 296. polyporinus, <i>Pk.</i> ... 4638 | |

** EU-HYPOMYCES. Sporidia uniseptata.

- | | | |
|--|---|---------------------------------|
| A. <i>Mycogenæ.</i> | | 317. Berkeleyanus, <i>Plow.</i> |
| 302. asterophorus, <i>Tul.</i> ... 4611 | | & <i>C.</i> ... 4625 |
| 303. fusisporus, <i>Tul.</i> ... 4612 | 318. candicans, <i>Plow.</i> ... 4626 | |
| 304. melanostigma, <i>Tul.</i> 4613 | 319. pæonius, <i>B. & Br.</i> 4627 | |
| 305. chrysospermus, <i>Tul.</i> ... 4614 | 320. torminosus, <i>Mont.</i> 4628 | |
| 306. lateritius, <i>Fr.</i> ... 4615 | 321. floccosus, <i>Fr.</i> ... 4629 | |
| 307. aureonitens, <i>Tul.</i> ... 4616 | 322. insignis, <i>B. & C.</i> ... 4630 | |
| 308. spadiceus, <i>Fr., Grev.</i> xii. 80 | 323. chromaticus, <i>B.</i> ... 4631 | |
| 309. rosellus, <i>A. & S.</i> ... 4617 | 324. Cesatii, <i>Mont.</i> ... 4632 | |
| 310. roseus, <i>Pers.</i> ... 4618 | 325. subiculosus (<i>B. & C.</i>) 4763 | |
| 311. lactiflorum, <i>Schw.</i> ... 4619 | B. <i>Terrigenæ, lignicolæ,</i> | |
| 312. Broomeanus, <i>Tul.</i> ... 4620 | 326. terrestris, <i>Plow. & Boud.</i> .. 4624 | |
| 313. ochraceus, <i>P.</i> ... 4621 | 327. tegillum, <i>B. & C.</i> 4645 | |
| 314. tomentosus, <i>Fries.</i> ... 4643 | 328. pannosus, <i>Schwz., Grev.</i> xii. 80 | |
| 315. aurantius, <i>Pers.</i> ... 4622 | 329. flavescens, <i>Schwz., Grev.</i> xii. 80. | |
| 316. fulgens, <i>Fr.</i> ... 4623 | | |

* * BERKELELLA. Sporidia pluriseptata.

330. stilbiger, *B. & Br.* ... 4642

Species ascis ignotis.

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|--|-------------------------------------|
| 331. deformans, <i>Lagg.</i> ... 4644 | 334. agaricola, <i>Chaill.</i> 4648 |
| 332. trichoderma, <i>Hoffm.</i> ... 4646 | 335. tubericola, <i>Schwz.</i> 4659 |
| 333. fulvus, <i>Fr.</i> ... 4647 | 336. boleticola, <i>Schwz.</i> 4650 |

Species incompletæ.

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|---|--------------------------------------|
| 337. Linkii, <i>Tul.</i> ... 4651 | 342. chlorinus, <i>Tul.</i> ... 4656 |
| 338. pezizæ, <i>Tul.</i> ... 4652 | 343. Baryanus, <i>Tul.</i> ... 4657 |
| 339. cervinus, <i>Tul.</i> ... 4653 | 344. tuberosus, <i>Tul.</i> ... 4658 |
| 340. decipiens, <i>Tul.</i> ... 4654 | 345. miliarius, <i>Tul.</i> ... 4659 |
| 341. bombacinus, <i>Karst.</i> ... 4655 | 346. albus, <i>Cr.</i> ... 4660 |

GEN. 12. **ELEUTHEROMYCES**, *Fckl.*—Perithecia cylindraceo-subulata, subdiaphana.—*Sacc.* ii. 455.

Sporidia continua, setigera.

347. subulatus (*Tode*) ... 4578

GEN. 13. **BYSSONECTRIA**, *Karst. Sacc. ii. 456.*—Stromate byssinoconnexæ, perithecia subsuperficialia, conferta.

A. *Sporidia hyalina.*

* *Sporidia continua.*

348. obducens, *Karst.* ... 4583 349. fimeti, *Cke.* ... 4584

** **HYPHONECTRIA**—*Sporidia uniseptata.*

350. byssiseda, *B. & Br.* 4758 355. umbrinella, *B. & Br.* 2762

351. australis, *B. & B.* ... 4759 356. fimicola, *Fckl.* ... 4761

352. flavo-lanata, *B. & Br.* 4779 357. bryophila, *Rob.* ... 4764

353. pezicula, *Speg.* ... 4760 358. epigœa, *Cke.* ... 4765

354. chrysocoma, *Cke. & Hk.,*

Grev. xii. 101

** * *Sporidia 2-5 septata.*

359. ambigua, *Speg.* ... 4943

B. *Sporidia colorata.*

* **SPHÆRODERMA.** *Sporidia continua.*

360. theleboloides, *Fckl.* ... 4590

** **LETENDRÆA.** *Sporidia uniseptata.*

361. turbinata, *Fckl.* ... 4921 362. eurotioides, *Sacc.* 4920

C. *Species dubiæ.*

363. auricoma, *Wallr.* ... 4787 365. Eugeniæ, *Curr.* ... 4802

364. Dufourii, *Fries.* ... 4798 366. rosella, *Cke. & Hark.,*

Grev. xii. 101

GEN. 14. **OOMYCES**, *B. & Br.*—Perithecia pauca sacculo inclusa, sporidia filiformia, hyalina.

367. carneo-albus (*Lib.*) ... 5004

GEN. 15. **PUIGGARIELLA.** *Speg.*—Subiculum flabellatum. Perithecia scutellato-dimidiata.—*Sacc. ii. 478.*

* *Sporidia hyalina, didyma.*

368. apiahyna, *Speg.* ... 4661

GEN. 16. **DIALONECTRIA**, *Sacc. (p.p.).*—Perithecia libera, superficialia, gregaria vel sparsa, carnosa, glabra, late colorata.

A. **NECTRIELLA.** *Sporidia continua.*

a. *lignicolæ vel corticolæ.*

369. aurea, *S. & S.* ... 4551

370. saccharina, *B. & C.* ... 4700

371. chrysites, *West.* ... 4556

372. vulpina, *Cke. Ellis N.E.*

Fungi, No. 774

373. coruscans, *Fr.* ... 4559

374. jucunda, *M.* ... 4548

375. thelopsioides, *Cr.* 4563

376. bambusæ, *B. & Br.* 4558

377. jucundula, *S. & S.* 4549

378. resinæ, *Fr.* 4564

b. *fructicolæ.*

379. versioniana, *S. & P.* 4552

c. *herbicolæ vel foliicolæ.*

380. digitalicola, *Cr.* ... 4562

381. citrina, *Cr.* ... 4565 d. *In cryptogamis parasiticæ.*
 382. umbelliferarum, *Cr.* ... 4566 385. mycetophila, *Pk.* ... 4554
 383. chlorina, *Cr.* ... 4567 386. perpusilla, *M.* ... 4560
 384. {furfurella, *B. & Br.* ... 4568 e. *Charticolæ.*
 (= *Keithii*, *B. & Br.* ... 4569 387. papyrogena, *S. & P.* 4553

B. EU-DIALONECTRIA. Sporidia uniseptata hyalina.

- a. *Lignicolæ vel corticolæ.* 420. graminicola, *B. & B.* 4717
 388. sanguinea, *Fr.* ... 4721 421. paludosa, *Fckl.* ... 4718
 389. peziza, *Tode.* ... 4757 422. thujana, *Rehm.* ... 4719
 390. laurina, *Sacc.* ... 4722 423. pandani, *Tul.* ... 4720
 391. rimincola, *Cke.* ... 4723 424. xanthostigma, *B. & Cke.,*
 392. truncata, *Ellis* ... 4724 *Grev.* xii. 82
 393. citrina, *Fr.* ... 4725 425. umbrina, *B.* ... 4796
 394. flava, *Bon.* ... 4726 426. depallens, *Cke. & Hark.,*
 395. umbellulariæ, *Plow. & Hk.* *Grev.* xii. 82
Trans. Cal. Ac. Sci. 1884,
 p. 26 427. depauperata, *Cke.* 4696
 396. dispersa, *C. & E.* ... 4727 428. galii, *Plow. & Hark.,*
Trans. Cal. Ac. Sci.,
 1884, p. 26
 397. verruculosa, *Niessl.* ... 4728 c. *Fructicolæ.*
 398. viticola, *B. & C.* ... 4729 {peponum, *B. & C.* 4713
 399. Venillotiana, *S. & R.* 4730 429. {aurelia, *B. & C.*
 400. urceolus, *Sp.* ... 4731 {perpusilla, *B. & C.*
 401. eucalypti, *Cke. & Hark.,*
Grev. xii. 82 d. *In cryptogamis parasiticæ.*
 402. quisquilaris, *Cke.* ... 4733 430. epispharia, *Tode.* 4740
 403. hæmatococca, *B. & Br.* 4735 431. Purtoni, *Grev.* ... 4741
 404. leocarpoides, *K. & C.* 4737 432. tephrothele, *B.* ... 4742
 405. martialis, *K. & C.* ... 4738 433. Fuckelii, *Sacc.* ... 4744
 406. congesta, *Sacc.* ... 4739 434. lichenicola, *Ces.* ... 4745
 407. lætifulva, *B. & Cke. Grev.*
 xii. 82 435. erythrinella, *Nyl.* ... 4746
 436. Robergei, *M. & D.* 4747
 437. lecanodes, *Ces.* ... 4748
 438. tabacina, *Ces.* ... 4749
 439. aurea, *Grev.* ... 4750
 440. affinis, *Grev.* ... 4751
 441. lycopodii, *Lev.* ... 4752
 442. muscivora, *B. & Br.* 4961
 443. filicina, *Cke. & Hk., Grev.*
 xii., 101
 e. *Charticolæ, terricolæ, &c.*
 444. charticola, *Fckl.* ... 4753
 445. ossicola, *Cr.* ... 4754
 446. indigens, *Arn.* ... 4755
 447. fibricola, *Pl.* ... 4756
 448. monilifera, *B. & C.* 4550

C. COSMOSPORA. Sporidia uniseptata, fusca, asperula.

449. cosmariospora, *Not.* ... 4786 451. myriadea, *Ces.* ... 4557
 450. fuliginea, *B. & Br.* ... 4734

D. CALONECTRIA. Sporidia oblongata, guttulata.

- | | |
|-----------------------------------|---------------------------------|
| a. <i>Lignicolæ v. corticolæ.</i> | 458. Curtisii, B. ... 4963 |
| 452. Brongniartii, Cr. ... 4958 | c. <i>Follicolæ.</i> |
| 453. Levieuxii, Fr. ... 4966 | 459. obvoluta, Kalch. ... 4954 |
| 454. ulicis, Cr. ... 4969 | 460. leucorhodina, Sp. ... 4955 |
| 455. aurea, Cr. ... 4956 | 461. minuscula, S. & Sp. 4960 |
| b. <i>Herbicolæ.</i> | 462. luteola, Desm. ... 4965 |
| 456. xantholeuca, Kze. ... 4953 | a. <i>Funicolæ.</i> |
| 457. sceptri, Karst. ... 4964 | 463. luteo-fusca, Cr. ... 4970 |

* Sporidia 2-5 septata.

- | | |
|------------------------------------|--------------------------------------|
| a. <i>Lignicolæ v. corticolæ.</i> | 472. erubescens, Desm. ... 4944 |
| 464. chlorinella, Cke. ... 4937 | c. <i>In cryptogamis parasiticæ.</i> |
| 465. agnina, Desm. ... 4939 | 473. Massariæ, Pass. ... 4947 |
| 466. Leightoni, B. & B. ... 4940 | 474. affinis, Sacc. sub. |
| 467. Fuckelii, Ntke. ... 4945 | <i>Paranectria</i> ... 4972 |
| 468. varians, Sacc. ... 4946 | 475. diminuta, B. & C. { 4771 |
| 469. platasca, Berk. ... 4951 | 476. cerea, B. & C. ... 4967 |
| 470. ochraceo-pallida, B. ... 4971 | 477. helminthicola, B. & |
| b. <i>Follicolæ.</i> | <i>Br.</i> ... 4968 |
| 471. pyrochroa, Desm. ... 4942 | |

** Sporidia 6-10 septata.

- | | |
|-----------------------------------|--------------------------------------|
| a. <i>Lignicolæ v. corticolæ.</i> | b. <i>Herbicolæ.</i> |
| 478. macrospora, S. & Sp. 4923 | 483. Plowrightiana, Sacc. 4925 |
| 479. Tarvisina, Sp. ... 4924 | 484. opalina, Cr. ... 4928 |
| 480. pseudopeziza, Desm. ... 4927 | c. <i>Follicolæ.</i> |
| 481. viburnicola, Cr. ... 4929 | 485. Daldiniana, Not. ... 4922 |
| 482. Richoni, Sacc. ... 4930 | d. <i>In cryptogamis parasiticæ.</i> |
| | 486. duplicella, Nyl. ... 4926 |

E. PLEONECTRIA, sporidia muriformia.

- | | |
|--------------------------------|-------------------------------|
| 487. lichenicola, Cr. ... 4994 | 488. lutescens, Arn. ... 6175 |
|--------------------------------|-------------------------------|

F. OPHIONECTRIA, sporidia filiformia.

- | | |
|---------------------------------|-------------------------------|
| 489. mellina (M.) ... 4999 | 491. agaricicola, B. ... 5001 |
| 490. trichospora, B. & Br. 5000 | 492. paludosa, Cr. ... 5002 |

G. *Species dubiæ.*

- | | |
|--------------------------------|---------------------------------|
| 493. epimyces, Fr. ... 4396 | 498. delicatula, Fr. ... 4797 |
| 494. smilacis, Schw. ... | 499. solani, Reinke. ... 4805 |
| 495. aurantium, Wall. ... 4789 | 500. Oropensis, Ces. ... 4806 |
| 496. granatum, Wallr. .. 4790 | 501. mobilis, Tode. ... 4795 |
| 497. fibriseda, S. ... 4793 | 502. lageniformis, B. & C. 4801 |

GEN. 17. LASIONECTRIA, Sacc.—Perithecia hirtella.

a. NOTARISIELLA. Sporidia continua.

- | | |
|--------------------------------|---------------------------------|
| 503. Rousselliana, M. ... 4570 | 505. carnea, Desm. ... 4572 |
| 504. villosula, Speg. ... 4571 | 506. nigroviridis, Cr. ... 4573 |

b. LASIONECTRIA, sporidia uniseptata.

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|-----------------------------------|----------|--|----------|
| 507. fulva, <i>Berk.</i> | ... 4570 | 512. dorcas, <i>B. & Br. Grev.</i> | |
| 508. mantuana, <i>Sacc.</i> | ... 4775 | | xii. 82. |
| 509. lasioderma, <i>Ell.</i> | ... 4776 | 513. punctum, <i>Boud.</i> | ... 4780 |
| 510. suffulta, <i>B. & C.</i> | ... 4762 | 514. Rexiana, <i>Ellis.</i> | ... 4781 |
| 511. hirtella, <i>S. & S.</i> | ... 4777 | 515. terrestris, <i>Cr.</i> | ... 4783 |
| | | 516. macrostoma, <i>B. & C.</i> | 4778 |

c. Sporidia oblonga guttulata.

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|--------------------------|----------|-------------------------------|------|
| 517. flavida, <i>Ca.</i> | ... 4957 | 518. Jungermannia, <i>Cr.</i> | 4959 |
|--------------------------|----------|-------------------------------|------|

d. Sporidia 2-5 septata.

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|-------------------------------------|----------|-----------------------------|----------|
| 519. volutella, <i>B. & Br.</i> | ... 4941 | 520. funicola, <i>Berk.</i> | ... 4949 |
|-------------------------------------|----------|-----------------------------|----------|

e. Sporidia 6-10 septata.

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|--------------------------|----------|
| 521. hirta, <i>Blox.</i> | ... 4932 |
|--------------------------|----------|

GEN. 18. **GIBBERELLA**, *Sacc.* ii. 552.—Perithecia glabra superficialis, cyanea vel violacea.

a. LISEA, sporidia didyma, hyalina.

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|-----------------------------|----------|-------------------------------|----------|
| 522. nemorosa, <i>Sacc.</i> | ... 4828 | 524. australis, <i>Speg.</i> | ... 4830 |
| 523. Buxi (<i>Fckl.</i>) | ... 4829 | 525. vitis (<i>Niessl.</i>) | ... 4831 |

b. GENUINA, sporidia triseptata.

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|-----------------------------|----------|------------------------------|----------|
| 526. pulcaris, <i>Fr.</i> | ... 4973 | 531. cyanogena, <i>Desm.</i> | 4978 |
| 527. baccata, <i>Wallr.</i> | ... 5974 | 532. acervalis, <i>Moug.</i> | ... 4979 |
| 528. moricola, <i>Not.</i> | ... 4975 | 533. Enonymi, <i>Fckl.</i> | ... 4980 |
| 529. flacca, <i>Wallr.</i> | ... 4976 | 534. Mapania, <i>S.</i> | ... 4981 |
| 530. Saubinetii, <i>M.</i> | ... 4977 | | |

c. Species dubiæ.

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|---------------------------------|----------|------------------------------|----------|
| 535. polycocca, <i>M.</i> | ... 4982 | 537. cicatrisata, <i>Pr.</i> | ... 4984 |
| 536. ficina, <i>C. & H.</i> | ... 4983 | 538. agglomerata, <i>Fr.</i> | 4985 |

GEN. 19. **HYPONECTRIA**, *Sacc.* ii. 455.—Perithecia tecta.

a. Sporidia continua.

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|--------------------------------------|----------|------------------------------|----------|
| 539. buxi, <i>D. C.</i> | ... 4579 | 541. Queletii, <i>Karst.</i> | ... 4581 |
| 540. flavonitens, <i>S. & S.</i> | ... 4580 | 542. gossypii, <i>Schwz.</i> | ... 4582 |

b. CHARONECTRIA. Sporidia uniseptata, hyalina.

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|----------------------------------|----------|----------------------------|----------|
| 543. consolationis, <i>Sacc.</i> | ... 4610 | 544. succinea, <i>Rob.</i> | ... 6172 |
|----------------------------------|----------|----------------------------|----------|

c. SPEGAZZINULA. Sporidia uniseptata, fusca.

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|---------------------------------|----------|
| 545. dubitationum, <i>Speg.</i> | ... 4919 |
|---------------------------------|----------|

d. CESATIELLA. Sporidia 3 septata.

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| 546. australis, <i>S. & Sp.</i> | ... 4986 |
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Sub-Fam. III. PSEUDONECTRIÆ.

GEN. 20. **HYSTRICULA**, *Cooke*.—Cæspitosa erumpens. Peritheciis confluentibus vel discretis, tomentosus, mollibus, corneo-membranaceis. Ostiolis teretibus longissimis.

* Sporidia globosa, hyalina.

547. *Montagnei*, *Cooke*, *Grev.* xii, 83.

GEN. 21. **PASSERINULA**, *Sacc.*—Perithecia candida, immersa, ostiolo cylindrico.

* Sporidia uniseptata, colorata.

548. *candida*, *Sacc.* ... 4918

GEN. 22. **MELANOSPORA**, *Ca.*—Perithecia simplicia, ostiolo subulato-rostrato (vel erostrato) apice sæpe penicillato.

A. **VITTADINULA**. Subiculo nullo. Perithecia erostrata. Sporidia continua fusca.

549. *episphaerium*, *P. & P.* 4591 551. *fimicolum* (*Hans.*) 4593

550. *aculeatum* (*Hans.*) ... 4592

B. *Perithecia rostrata.*

a. **EU-MELANOSPORA**. Sporidia continua.

552. *chionea*, *Fr.* ... 4594 559. *Zobelii*, *Ca.* ... 4601

553. *vervecina*, *Desm.* ... 4595 560. *vitrea*, *Ca.* ... 4602

554. *lagenaria*, *Fr.* ... 4596 561. *leucotricha*, *Ca.* ... 4603

555. *Helvellæ*, *Cke.* ... 4597 562. *Zamiæ*, *Ca.* ... 4604

556. *arachnophila*, *Fckl.* ... 4598 563. *barbata*, *P.* ... 4605

557. *caprina*, *Fr.* ... 4599 564. *parasitica*, *Tul.* ... 4606

558. *arenaria*, *M.* ... 4600

b. **BIVONELLA**. Sporidia muriformia.

565. *chrysomalla*, *B. & Br.* 4607

c. *Dubiæ.*

566. *lucifuga*, *Jungh.* ... 4608 567 *Cœmansii*, *West.*... 4609

GEN. 23. **ACROSPERMUM**, *Tode.*—Perithecia elongata vel clavata, carnosae sub-cornescens. Sporidia filiformia.

a. **BARYA**. Perithecia gregaria.

568. *parasiticum*, *Fckl.* 5870, 5003 *Grev.* xii. 101

b. **EU-ACROSPERMUM**. Perithecia sparsa.

569. *compressum*, *Tode.* ... 5863 575. *Robergeanum*, *Desm.*,

570. *conicum*, *P.* ... 5864 *Grev.* xii, 101.

571. *graminum*, *Lib.* ... 5865 576. *viridulum*, *B. & C.* 5869

572. *decipiens*, *Pass.* ... 5866 577. *corrugatum*, *Ellis* 5871

573. *Ravenelii*, *B. & C.* ... 5867 578. *fultum*, *Hark. Trans.*

574. *foliicolum*, *B.* ... 5868 *Cal. A.*, 1884, 47

c. *Species dubiæ.*

579. *pyramidale*, *Tode* ... 5872 581. *cornutum*, *Fr.* ... 5874

580. ? *laetum* (*Ehr.*) ... 5873

BRITISH FRESH-WATER ALGÆ.

In answer to various communications as to the progress of this work, we are able to announce that the plates of Part IX. are in the printer's hands, and will shortly be ready for publication. Part X. is also in an advanced condition, and this will contain the *Rhodophyceæ*, which, with supplement, introduction, glossary, and Index, will complete the work. It is hoped that this consummation will be reached about September, before active mycological operations commence. A few copies of the complete work will be bound in two volumes, cloth, when finished, but unfortunately the number will be much smaller than we could have desired, and therefore only prompt application will secure them, before the volumes share the fate of their predecessors, by Dr. Hassall, and become notified as "out of print."

DESMIDS OF THE UNITED STATES.

The Rev. F. Wolle has just published a volume on the above subject, with 52 plates and descriptive letterpress, at the moderate charge of five dollars, which would be equivalent to a British guinea. Although we have not yet seen it, there is no doubt of both figures and descriptions being fully reliable, and we commend it with confidence to the attention of our English readers. A large number of the species are also British. The address of the author is Bethlehem, Penn., U.S.A.

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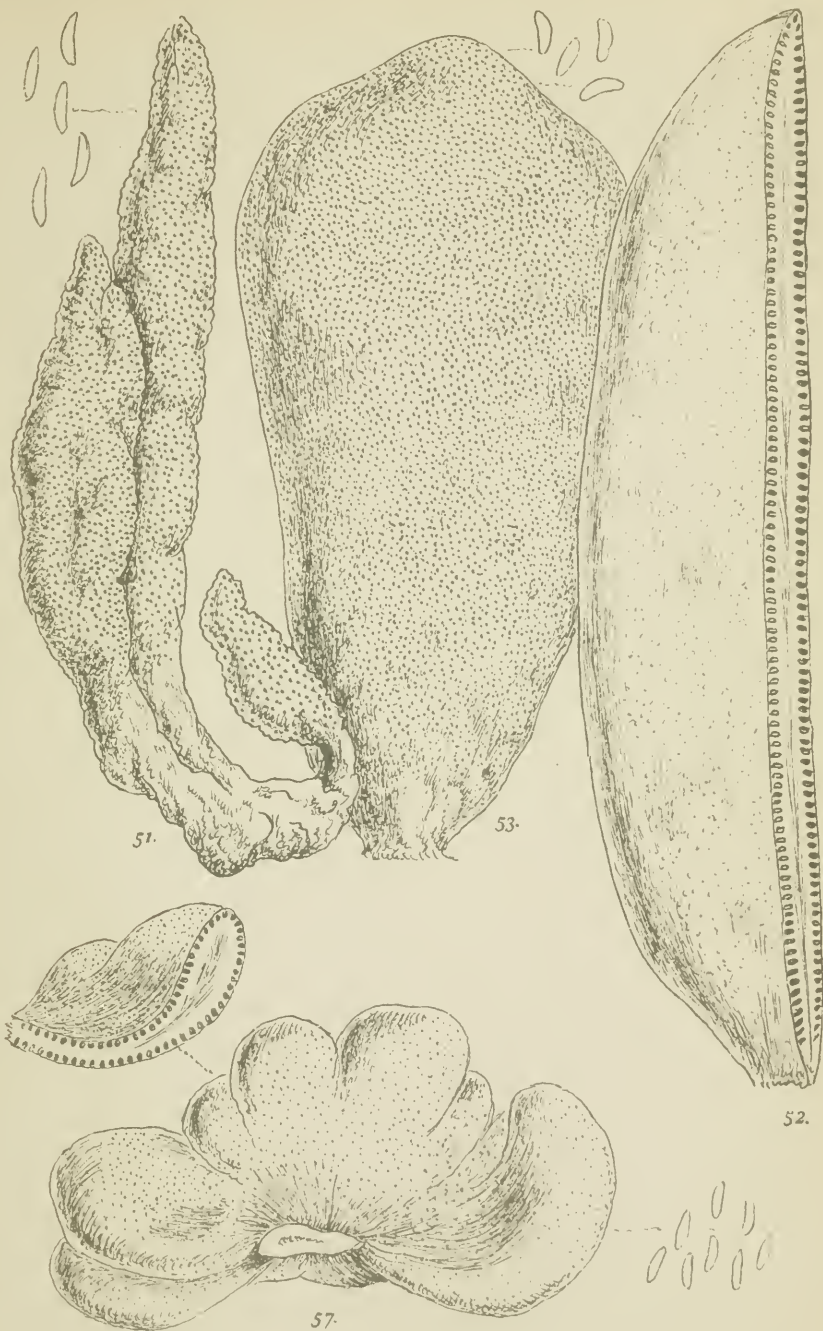
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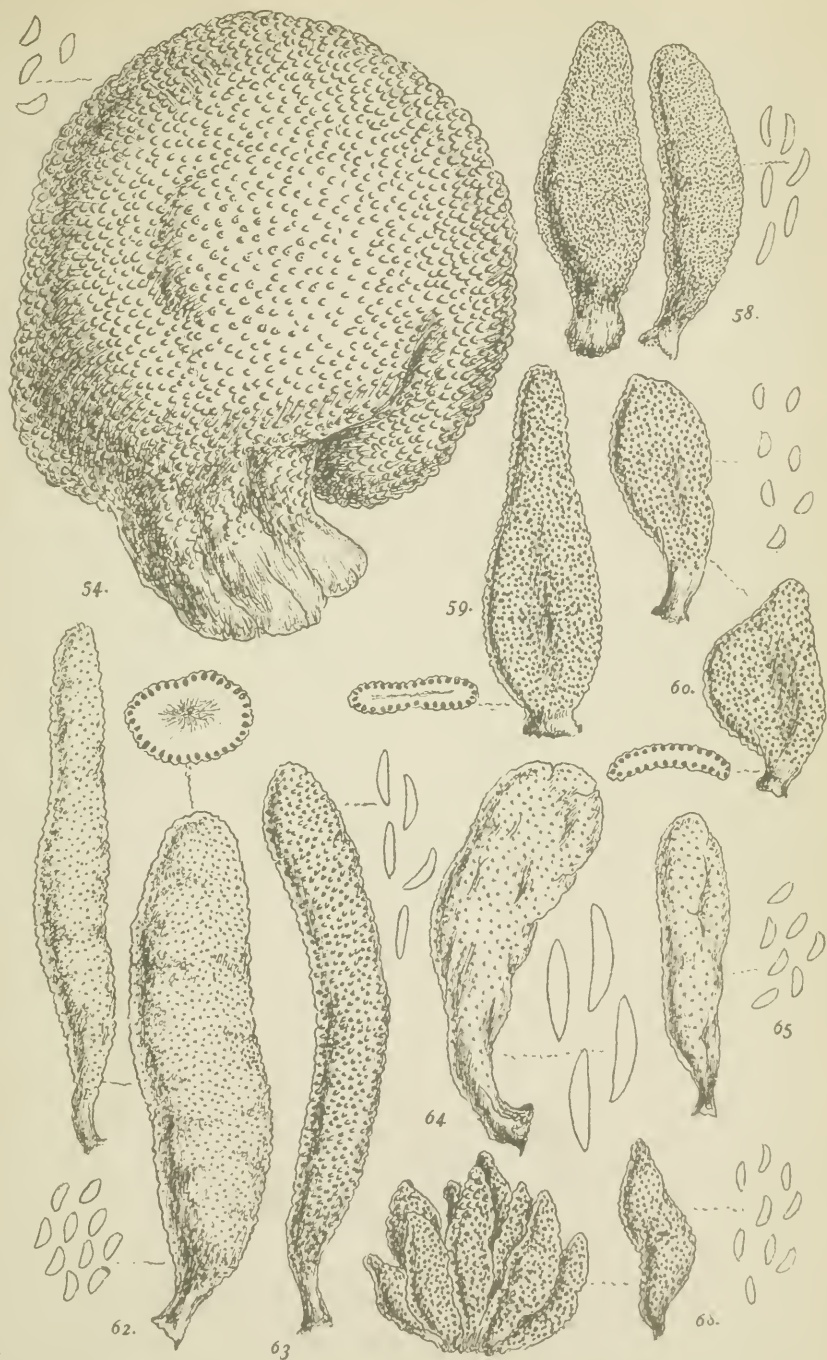
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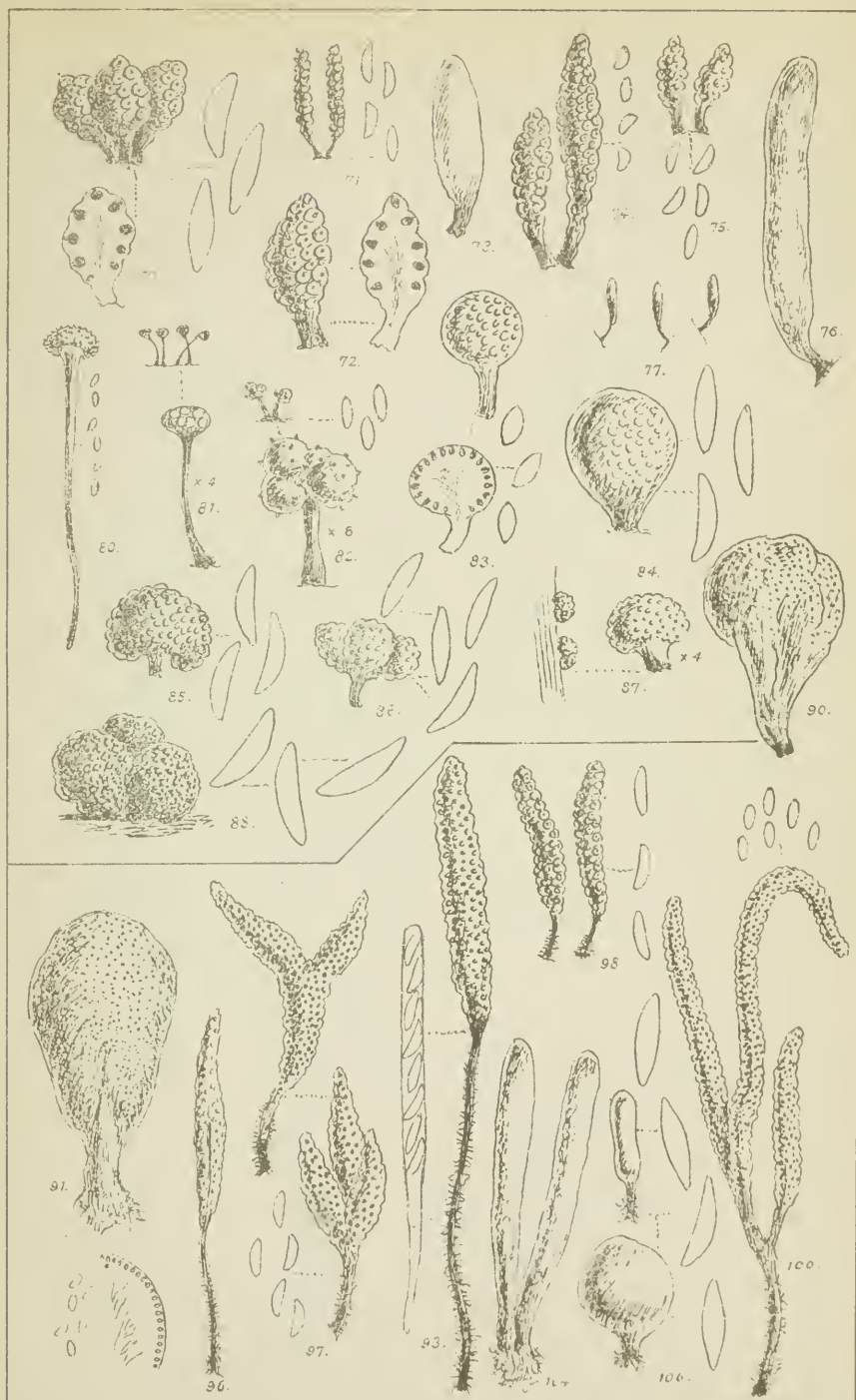
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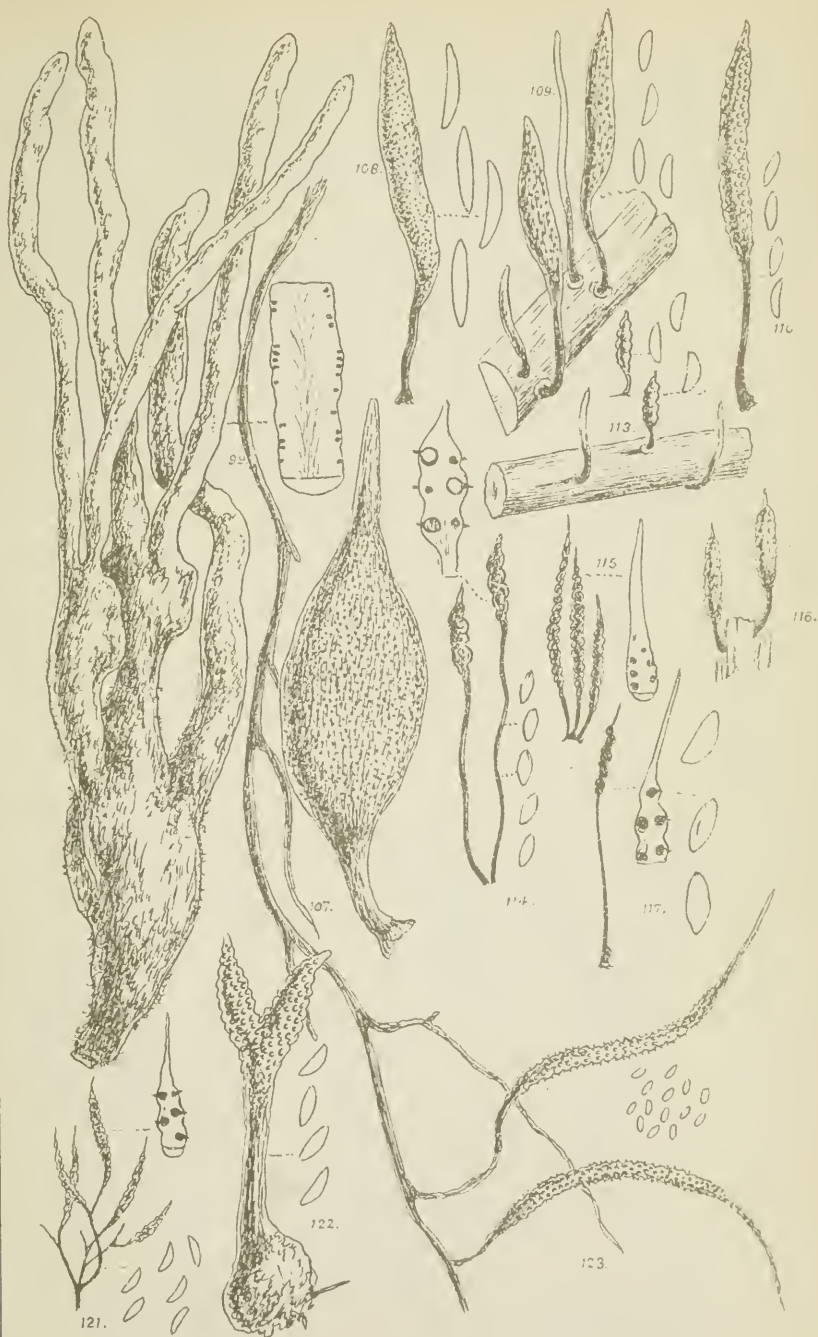
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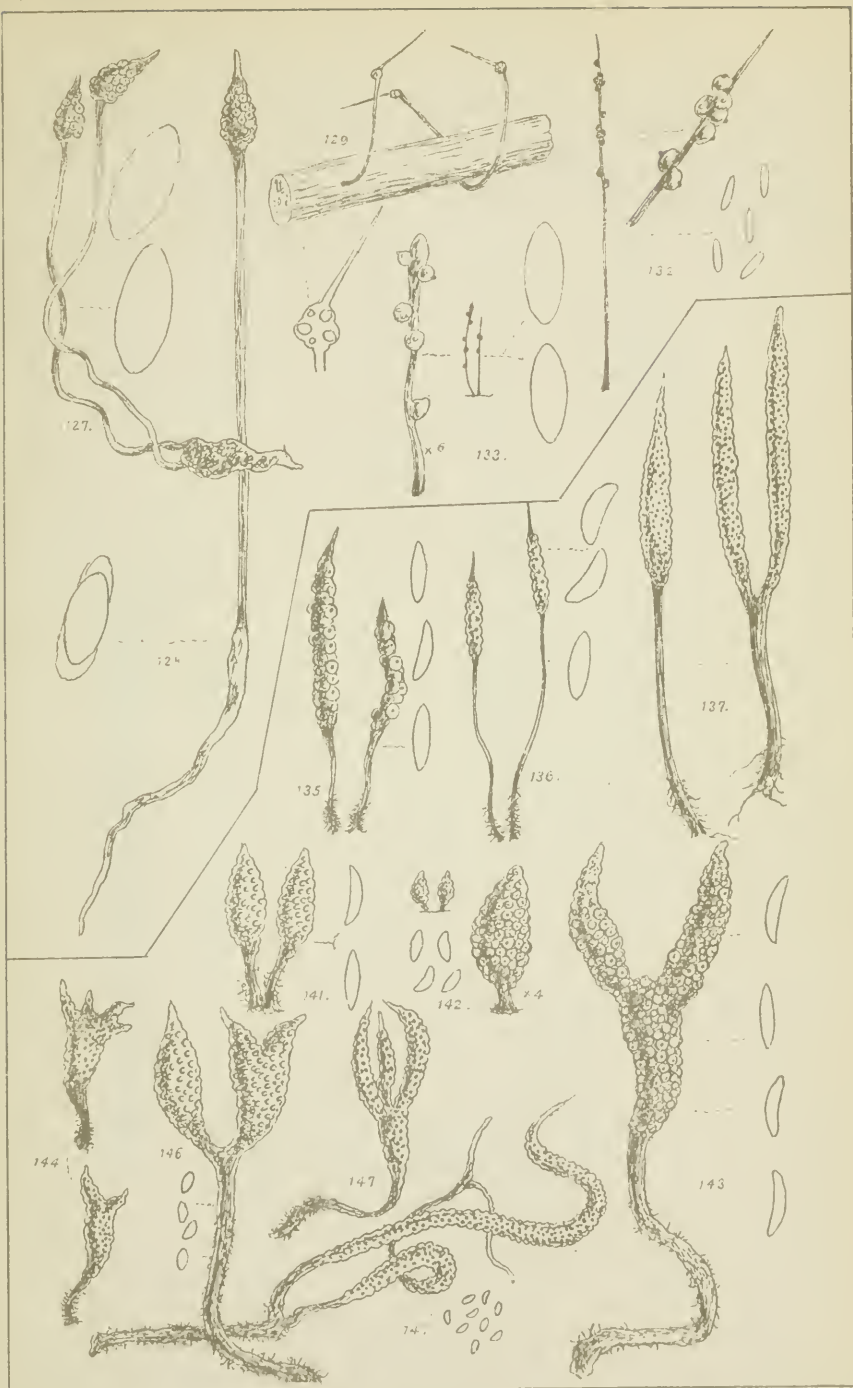
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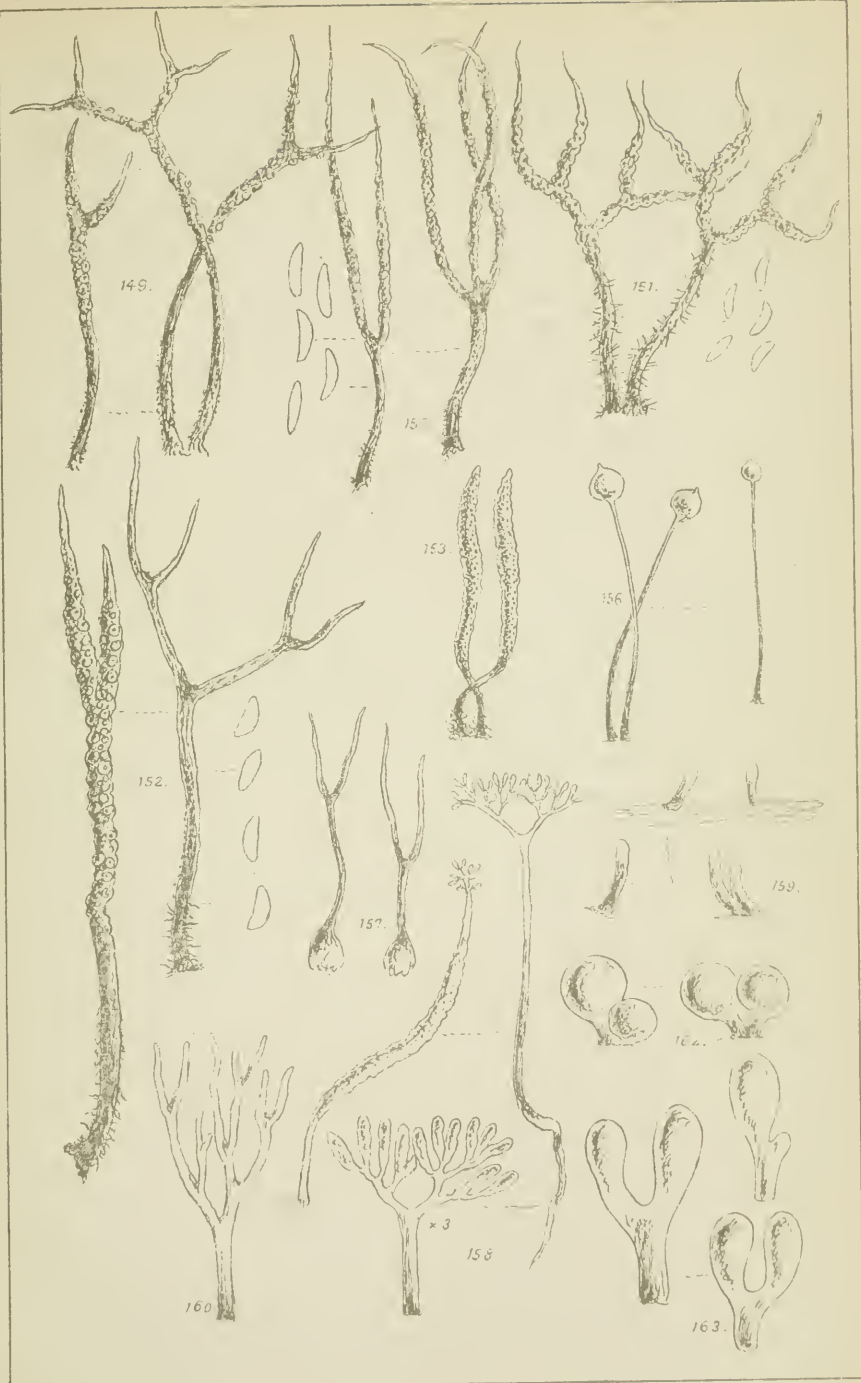












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